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ABSTRACT

The booklet describes research on deafness undertaken at Gallaudet College. The work of the following departments are briefly summarized: the Division of Research and the Gallaudet Research Institute, the Kendall Elementary School/Model Secondary School for the Deaf, Educational Research Laboratory, the Office of Cued Speech Programs, the Mental Health Research Program, the Sensory Communication Research Laboratory, the Signed English Research Program, and the Office of Demographic Studies. Faculty and staff members of the Division of Research are listed, along with representative publications. A mission statement reflecting the college's commitment to an organized research program is also presented. (CL)

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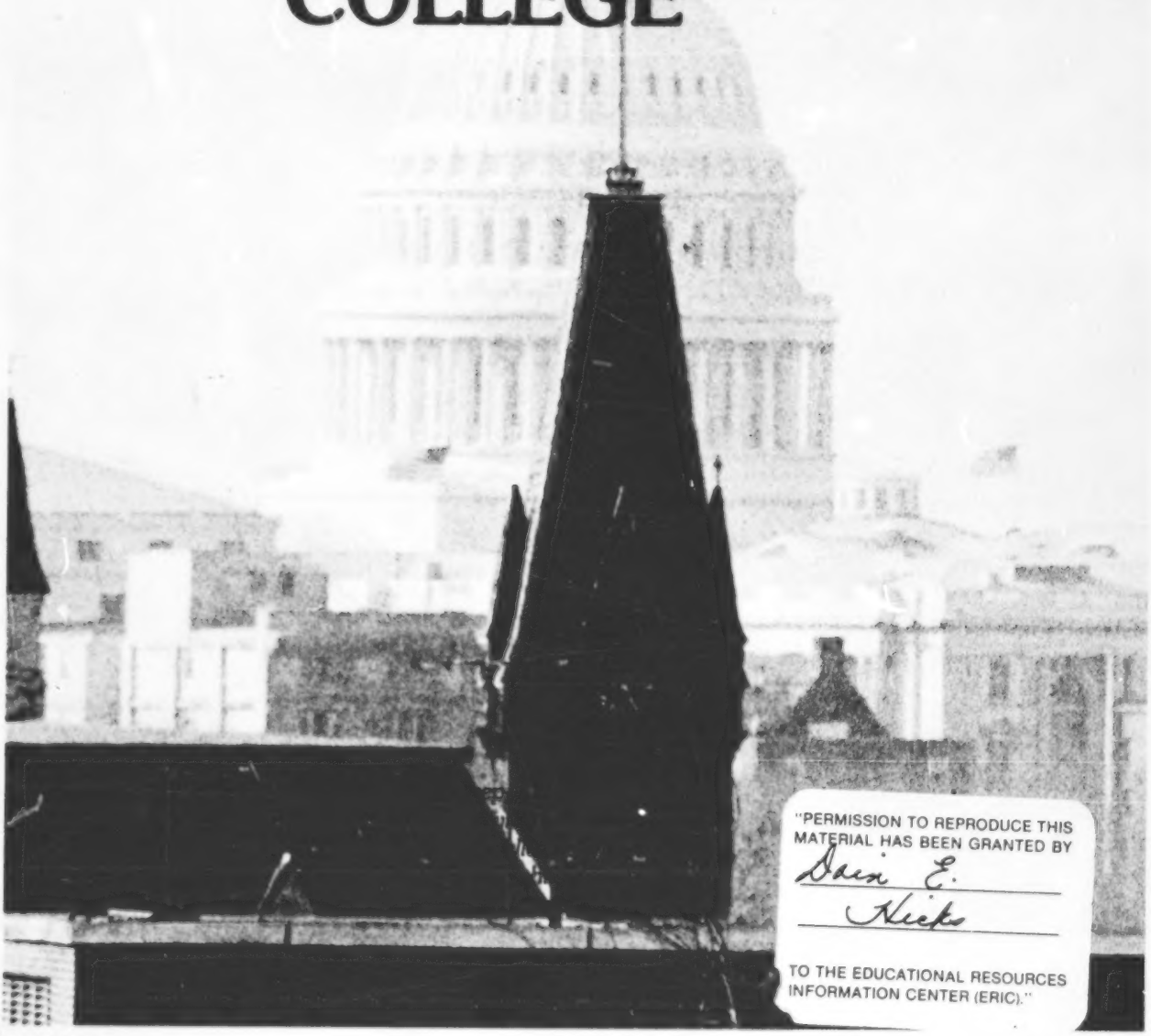
RESEARCH AT GALLAUDET COLLEGE



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A Message From The President

In 1978, Gallaudet College reviewed and restated its mission. The new statement of mission, *New Challenges, New Responses*, contains 16 goals which have been accepted by the Board of Trustees as challenges to the College for the next five to eight years. In order to respond adequately to these new goals, the College reorganized its administrative structure into five divisions, each under the management of a Vice President.

In recognition of the increased importance of solving problems affecting the education and welfare of deaf persons, the Division of Research was established. This permits all Pre-College and College research to be administered and coordinated within a single organizational structure. Although the Division of Research has been operational only for a short time, it is already apparent that the coordination of the various research units is having a synergistic effect. Research is becoming more efficient and productive. More inquiries are being sent to the Division of Research. Units within this Division are offering data which are increasingly relevant to educational programming for deaf people throughout the nation.

Although tremendous progress has been made in the United States over the last few years for deaf people, much of this progress has resulted from new legislation, more responsive policies, and the extension of rights to deaf people themselves. This progress will continue and Gallaudet College has pledged itself to remain an advocate for deaf people throughout the nation. These approaches, however, do not address the serious problems of knowing *how, when, what* and *why* in the important areas of education, career development, communication, and full participation in society. These problems will yield only to in-depth and often longitudinal research studies, and these are the problems addressed by the units within the Division of Research.

This publication presents a picture of the substantial research commitment Gallaudet College is making to deaf people throughout the nation. We want the deaf citizen and the general public to know that Gallaudet College is a center of relevant research and that we are seeking to promote research on the problems of deaf people in other centers as well. We welcome collaboration, and we are searching for additional resources by which the College can multiply the effect of its own efforts.

This brief publication is as much an invitation as it is a statement. Join us. If you can't join us, help us. The Division of Research at Gallaudet College can assist deaf people throughout the nation and in many other countries to have a full life with and among the rest of us.

Edward C. Merrill, Jr.
President
Gallaudet College
August 14, 1980

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Photography by Charles Shoup

Foreword

Doin Hicks
Vice President for Research

Gallaudet College has made a significant commitment to 16 major goals. One of these clearly sets the stage for what must be accomplished by the Research Division in the next few years: "Gallaudet will greatly expand its commitment to basic and applied research and seek to become a major research facility specializing in the problems of deafness". The organizational structure for pursuing this goal is taking shape. The task ahead is one of extensive challenge but one which we accept with enthusiastic optimism. The quality of human resources provided and the nature of leadership exercised are the most critical elements in the pursuit of this goal. Some thoughts regarding the latter seem appropriate at the outset.

Beyond the generic principles of administration which apply to managerial leadership, there is a limited body of knowledge regarding research administration in particular. The role of administration in the fields of research and development is best seen as being less directive than that required of many endeavors: A stance characterized as administration *for* research as opposed to administration *of* research. It is most appropriately concerned with leadership in the identification of priority problems or areas of interest to the institution and the field, the engagement of individuals, the organizing of groups of highly qualified people willing to work in specified areas, and the providing of a climate in which they can follow their inclinations and best judgments with regard to the specifics of their work.

A reasonable level of respect for the independence of social science researchers is a prerequisite to their success. This need is both characteristic of persons who are, or who see themselves as, original and creative, and the result of the nature of the creative enterprise itself. Much of our most socially significant research has resulted from highly talented people who were encouraged to follow their own sense of direction in areas in which they were personally intrigued and prepared to advance. Once priorities are established and an organization is in place, the major role of research administration is the creation of a climate in which inquiry can proceed within agreed upon areas but without undue constraint. The essential role of the Vice President, then, is that of a facilitator of research, both within the Institute and campus-wide. Collaborative research, with agencies and individuals external to the campus, is an additional dimension of this facilitating role.

Higher education has a responsibility to society to address critical issues through research activities; Gallaudet College is no exception to this expectation. Seeking answers to questions about deafness and deaf people will require the research efforts of persons at Gallaudet College both within and outside of the Research Institute. Undoubtedly, there is no one set of answers to the complex problems associated with deafness. Rather, there are many answers and many pieces to the puzzle. Nevertheless, research activities both within and outside of the Research Institute will bring us closer to achieving our overall goal: "To improve the quality of life of deaf persons through research."

A Thousand Unanswered Questions

The Division of Research and The Gallaudet Research Institute

Despite the fact that educational programs for deaf people have been a going concern in the United States for a century and a half, and despite the fact that in the last few years there has been a quantum jump in public awareness of and sensitivity to deaf people and a corresponding expansion in opportunities and services for deaf citizens, hundreds, even thousands, of questions about deafness and deaf people remain unanswered. Probably even more significant, hundreds and perhaps thousands of questions about deafness and deaf people remain unasked.

The classic definition of the functions of a college or university faculty is: teaching, research, and service. Teaching, the transmission of the accumulated knowledge and wisdom of a culture is, of course, the most basic mission of a college or university. But what is it that is to be taught and transmitted? Not all wisdom, not all knowledge has come down to us from the ancients. Hence, the second classic function of a faculty, which is engaging in the research and scholarship which broadens and deepens knowledge and extends it to new spheres of life and thought. Once one has acquired knowledge or skill, how can one not recognize and accept the corresponding responsibility to use that knowledge and skill in the service of humanity? Hence the origin of service as the third classic function of a college or university faculty.

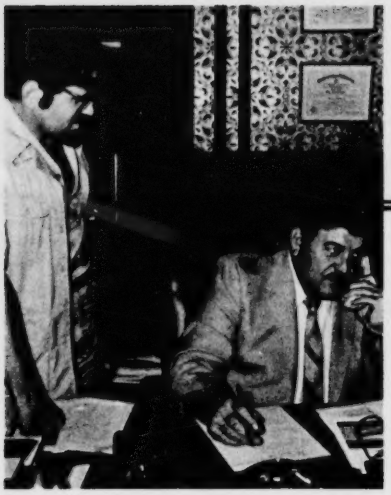
Throughout Gallaudet's first century of existence, certain members of its faculty distinguished themselves in the production of new knowledge—in research or scholarship—in addition to their initial devotion to teaching deaf students. In the late 1800's, Professor E. A. Fay, with support from Gallaudet and from Alexander Graham Bell, conducted and published his monumental study of marriages among deaf people and the inheritance of deafness in the United States. Powrie V. Doctor conducted and published a number of historical and statistical studies of the state of education of deaf children throughout the country. Anders Lunde in the Sociology Department, Jerome Schein in the Office of Psychological Research, and a number of other Gallaudet faculty members distinguished themselves through study and scholarship as well as through teaching deaf students. Many other individuals who were associated with Gallaudet College as students, especially in the graduate programs, later gained recognition as scholars and researchers in a variety of universities, agencies, and other institutions through the years.

Gallaudet College, therefore, has a long standing tradition of research and scholarship as well as of excellence in teaching deaf students. It was not until about 15 years ago, however, in the mid-1960's, that the emphasis on research and scholarship as part of Gallaudet's mission as an institution began to grow and flourish to become a major part of the work of the institution. Beginning at that time, Gallaudet College marshalled both its own internal resources and external grant funds for the purpose of assembling major, long-term research programs in areas of high priority and importance. The Office of Demographic Studies was established to carry on and expand the work of Powrie V. Doctor and others in studying the national network of special education programs for deaf students.

Dr. James Pickett was asked to begin a substantial line of research on the speech and hearing of deaf persons. Professor William Stokoe in the English Department began to concentrate in the area of sign language linguistics, a line of research which led to the later formal establishment of a Linguistics Research Laboratory. Dr. Orin Cornett, although primarily engaged in administrative duties as vice president, began to develop his system of Cued Speech to assist in the speechreading process. Dr. Harry Bornstein began the development of his Signed English project, to demonstrate ways of using signing to develop English language competence in deaf children.

Recognition of the quality of these projects was received from the profession as well as in the form of substantial external funding, in addition to the base support which Gallaudet provided from its own funds. The activities mentioned just above received grant support amounting to several million dollars over a period of years, from the National Institute of Neurological and Communicative Disorders and Stroke, the National Science Foundation, the Bureau of Education for the Handicapped, and the National Institute of Education.

During this same period, federal legislation authorized the establishment of a Model Secondary School for the Deaf, and the operation of Kendall School as a national demonstration elementary school. Both sets of authorizing legislation indicated that the conducting and reporting of research on the educational problems of hearing impaired children and youth was to be a significant part of the mission of these two new schools.



Dr. Doin Hicks (r.) is Gallaudet's Vice President for Research, and Dr. Raymond Trybus is Dean of the Research Institute.

Consequently, the Model Secondary School established its Division of Research and Evaluation, and at a somewhat later date the Kendall Demonstration Elementary School established its research unit. Both of these groups pursued a wide variety of research and evaluation studies, designed to investigate the critical issues in education of the deaf, and to evaluate the effectiveness of new teaching methods, organizational patterns, and curriculum materials developed and put into practice at the two demonstration schools.

After some years of this considerable growth in research activity on Kendall Green, the need for greater coordination and visibility for research became apparent. Consequently, in 1973, an Associate Dean for Research was appointed within the Gallaudet Graduate School, with the responsibility for supervising and promoting formal research activities of the institution.

When, in 1977, Gallaudet College began a major internal process of reexamining its goals and objectives for the future, one of the 16 goals which emerged from the process was a clear call for an expansion and improvement of research emphasis throughout the institution. Although this expansion of research was only one of 16 goals established in that process, its exceptional importance to the future of the institution was underscored by the establishment, in 1978, of a Division of Research headed by a Vice President, one of five such Divisions in the structure of the institution.

Within the new Division, two broad sets of activities occur: within the Office of the Vice President a variety of administrative, policy, and support functions are provided to the campus as a whole, and within the Research Institute are the major organized research programs and laboratories.

Office of the Vice President

The Vice President serves as chief administrative officer for the Division, and in addition exercises a series of campus-wide functions in support of research. While the offices and laboratories of the Research Institute make up the *majority* of research on the Gallaudet campus, they do not represent the *totality*. Significant amounts of research are conducted in other units of the campus, both as individual faculty member and graduate student research, and as research and evaluation activities of operating units within the College. Many of the activities of the Vice President's office are intended to support this entire spectrum of research on campus. Thus, the Vice President serves as Chairperson of the Editorial Board of the Gallaudet Press, and administers the copyright and patent policy of the institution. In addition, the Vice President's office is responsible for the Institutional Research Review Board for the Protection of Human Subjects, a committee mandated by Federal law. In a more general sense, the Vice President is responsible for the development and administration of policy pertaining to research on campus, whether or not this research occurs within the Research Institute. Proposals for Federal grant support of research are reviewed and approved by the Vice President for Research. The obtaining of funding for research, whether through the institutional budget or through external grants and contracts, is also a major responsibility of the Vice President.

In addition to these functions exercised by the Vice President, he supervises two special functions, a special assistant for planning, and three staff offices which provide research support services.

The Powrie V. Doctor Chair of Deaf Studies

Following the death of Professor Powrie V. Doctor in the summer of 1971, the College established a Chair of Deaf Studies in his memory, to which a different individual is invited each year. The persons invited have made significant contributions in the past to deafness and deaf people, and are supported on the Gallaudet campus for a year in order to pursue some particular project or projects. The occupant of the Chair of Deaf Studies for the 1979-80 academic year was Dr. McCay Vernon, a noted psychologist, who spent the year teaching, lecturing, and writing in a variety of areas relating to the psychological development of deaf children. The holder of the Chair for the 1980-1981 academic year is Dr. Lionel Evans, Headmaster of the Northern Counties School for the Deaf in Newcastle, England. His major work for the year concentrates on developing a sound theoretical and empirical base for the practice of total communication in the education of deaf children.

DSH Abstracts

Another special function supervised by the Vice President for Research is the *DSH Abstracts*, a joint project of Gallaudet College and the American Speech, Language, and Hearing Association, which provides a review

Dr. Thomas Kluwin (l.) develops a research proposal with Dr. Clarence Williams, Coordinator of Faculty and Graduate Student Research.

abstracting service of the world's and literature in the areas of deafness, speech, and hearing. The current editor of the DSH Abstracts is Dr. Ernest J. Moncada.

Office of Faculty and Graduate Student Research

This office, headed by Professor Clarence Williams, provides intellectual and financial support to faculty members and graduate students in developing and conducting research in their areas of interest. Many of Gallaudet's faculty members who presently hold the master's degree and are engaged in work towards the doctorate make extensive use of Dr. Williams' service in clarifying their thinking on topics for dissertation research, directing them to relevant literature, and assisting in the research design and statistical analysis portions of the dissertation. Similar consultation and assistance is provided to graduate students, including both the doctoral students in Gallaudet's program in Special Education Administration and master's degree students in other programs of the institution who have a research interest. In addition to the essential intellectual assistance of discussion of relevant topics, design and statistical analysis issues, and the like, Dr. Williams administers a faculty and graduate student research support fund for projects of limited size. His services are constantly in demand both by individuals and by entire departments, and his work over the past few years has been a very significant support for the increasing interest in research on the part of Gallaudet faculty members who have previously had relatively little involvement or interest in research. On occasion, the small projects which faculty members or graduate students develop in consultation with Dr. Williams lead to bigger ideas and eventual grant applications for more substantial support for projects of greater scope and longer duration. The services of Dr. Williams' office are available to all members of the faculty and graduate students throughout the institution.

Office of Research Utilization and Publications

It has long been known that there is no assurance that the findings of research will be put into practice unless systematic attention and effort are devoted to this process. Because Gallaudet's investment in research, both within the units of the Research Institute and across campus, is so important to the future of the institution, it is essential that adequate and systematic attention be paid to the dissemination and potential utilization of the results of research. Through this office, the Division of Research publishes *Directions*, a quarterly journal of a topical nature which focuses on major professional and scientific issues relating to deafness. In addition, staff members in this office work with the personnel of the Research Institute and other members of the Gallaudet faculty and staff in preparing publications, workshops, and the like, in order to make the findings of Gallaudet research available to appropriate audiences.

Phil Kerstetter serves as planning assistant to the Vice President for Research.

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Research Institute Dean Raymond J. Trybus, Dr. Tad Uno of the Educational Research Laboratory, and secretary Myrtle French review production of a report on the Division's word processing equipment.

Office of Sponsored Research

The Office of Sponsored Research (OSR) is a campus-wide service unit having general responsibility for stimulating, facilitating, coordinating, and reviewing research proposals directed to federal or state agencies. The OSR is concerned with all areas of grantsmanship, including identifying sources of potential funding and preparing proposals. The Office also works with the College's Development Office in seeking funds from corporations and private foundations.

The Office of Sponsored Research has six major areas of responsibility:

1) Provide encouragement, consultation, and technical assistance in planning and development of proposals to federal agencies.

2) Identify federal procurement invitations, contract awards, and subcontracting leads of potential research interest to the College.

3) Develop and implement proposal-review procedures for ensuring that all certifications and form requirements are met; that budget items are correctly computed; that the College is not accepting some obligations that it is unable or unwilling to carry out; and that the proposal meets quality and other standards of the College.

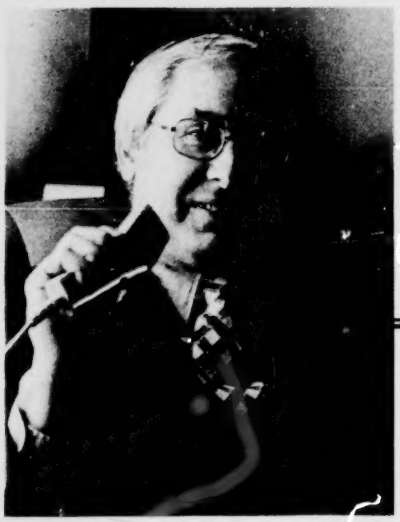
4) Conduct grantsmanship training through workshops, conferences and individual tutorial sessions.

5) Plan, develop and submit proposals for external funding on behalf of the Division of Research, or in collaboration with other on-campus or external research units or agencies.

6) Make contact with representatives of federal agencies to determine their mission, scope, and general areas of funding interest, and to acquaint them with the mission of the College, and with its goals, interests and needs.

During the past two years, the OSR has provided consultation and technical assistance to approximately 80 individuals, conducted grantsmanship training to approximately 35 persons, and has provided direct writing assistance to some 20 proposals. The effort has resulted in funding for the Division of Research, the Division of Public Services, the National Academy, Model Secondary School for the Deaf, International Center on Deafness, and the Department of Romance Languages, among others.

The OSR provides information updated on a weekly basis for faculty and regularly reviews a number of publications and reference services to alert the campus of grant/contract opportunities that might otherwise go un-



Dr. Glenn Pfau is Director of the Office of Sponsored Research.

noticed. Also on file is information on proposal formats, proposal-writing procedures, preliminary proposal outline, characteristics of good proposals, proposal evaluation guidelines, and examples of proposals previously submitted which are perceived to be of high quality.

All of these functions of the Vice President, or of the offices and units which report directly to the Vice President, serve to support research campus-wide and occupy a significant portion of the personnel and budget of the Division of Research. The majority of the budget and personnel of the Division, however, is devoted to the Research Institute, the operational arm of the Division of Research.

The Gallaudet Research Institute

The Gallaudet Research Institute consists of the Office of the Dean and a substantial group of researchers and research support personnel who are engaged in the conduct of research on major topics of importance to deafness and deaf people. The personnel of the Research Institute are organized into a number of research offices and laboratories, most of which began their work many years before the Division of Research and the Research Institute were established. Thus, an organizational chart of the Institute would presently reflect rather clear-cut units with discrete responsibilities and areas of expertise. Given the variety of topics needing to be studied and given the varying interests and talents needed to address these significant problems, some level of organization of research personnel into working groups will continue to be appropriate and necessary. However, the development of the Research Institute as an Institute rather than as a collection of semi-autonomous groups means that, over time, the organizational groupings will become more fluid and flexible than they have been in the past. More personnel will contribute their skills and talents to several programs of the Institute, rather than exclusively to one research group. Similarly, major future work of the Institute will more and more frequently be organized along project management lines, with particular project managers drawing personnel and services from each of the research units as needed to complete a particular line of research. This greater commonality and integration of research will be further advanced in the years ahead, when the research groups which are now scattered throughout the campus are reassembled into a common physical location, which will permit much more frequent and continuous interaction and stimulation across unit boundaries.

Later sections of this document will report in detail on each of the existing research groups and their activities.

Betty Clarke, administrative secretary, and Dean Raymond Trybus review the Federal Register *for research funding opportunities.*

This will define the past and the present of the Gallaudet Research Institute. But what of the future?

What Future Directions Will Gallaudet Research Be Taking?

Unlike the research activities of instructional faculty members, which are dictated by their interests and skills, and which are conducted as important functions, but functions secondary to a teaching role, the work of the Gallaudet Research Institute is directed by a broad consensus on the areas of highest priority within the field of deafness. The process of establishing consensus on these priority areas has been underway for the last five years, and both current and planned activities are responsive to this emerging definition of the most critical needs for new ideas and information relating to deafness. Therefore, the new directions that the Research Institute will be taking will be first of all its old directions. Questions of speech communication, of reading and language development, of educational outcomes, of the nature and functions of sign languages, and the like, remain important issues which will need to be studied for many years to come. In addition, however, some new developments are expected in the years ahead. One such area is that of the mental health problems of and services to deaf people. In the last three or four years there has been a large sudden explosion of interest among mental health professionals in providing services to hearing impaired individuals and their families. Little research has been done, however, on the relative effectiveness of various methods of diagnosis and therapy with a variety of kinds of deaf individuals. Does the use of interpreters in the therapy situation interfere with the intimate personal relationship of therapy, or does it expand opportunities for service which have previously been closed to deaf persons? In what ways and to what extent do deaf clients respond differently to deaf versus hearing professionals, when both groups are equally fluent in communication with deaf persons? What are the relative merits of acquiring one's basic academic training in a mental health field first, followed by on-the-job initiation into services to deaf people, as compared with a model in which training for service to deaf people is woven through the basic degree curriculum? These and a host of other questions remain to be examined.

What actually happens in sign language interpreting? What is the relationship between the message sent by the interpreter and the message received by the deaf individual in a variety of personal, medical, educational, legal, and other common interpreting situations?

What is the relationship between what a deaf person signs and what the interpreter speaks in a variety of interpreting situations? How does the interpreter's training, intelligence, personality, age, family background, and

Carol Bennetti (l.) and Midge Kahl provide secretarial support to the Division administrative offices.

Judy Harkins (standing), assistant to the Dean, and Vivian Stevens, word processing specialist, revise an earlier draft of a report on Research Institute activities.

the like relate to the interpreter's effectiveness with a wide variety of deaf clients? Which approaches to training interpreters are more effective with what kinds of trainees? As in the case of mental health services, there has been a recent explosion in public awareness of the communication differences of deaf people and a greatly increased willingness to provide sign language interpreters for deaf individuals. However, although time and money are being devoted to training interpreters, there are vast gaps in our knowledge of how best to select and train interpreters and how to insure their effectiveness in a variety of interpreting situations. This is another area to which we expect to give attention in the years just ahead.

Another potential area of future research direction is one which probably outweighs all of the others insofar as the number of potentially affected people is concerned. This is the question of hearing loss associated with aging, and how best to cope with the very serious communication difficulties this poses. Existing data suggest that the number of individuals in their senior years who have lost or are losing their hearing is substantially greater than the number of persons who became deaf at birth or during childhood. Although there has been some medical and audiological research in this area, there has been far less study of the everyday life problems of such persons and of the various kinds of assistance which might be provided to them in meeting the demands of life without sound. To what degree can elderly adults learn to use hearing aids effectively? . . . . to use signing or Cued Speech effectively? . . . to learn about and employ the dozens of communication methods and devices used by deaf people?

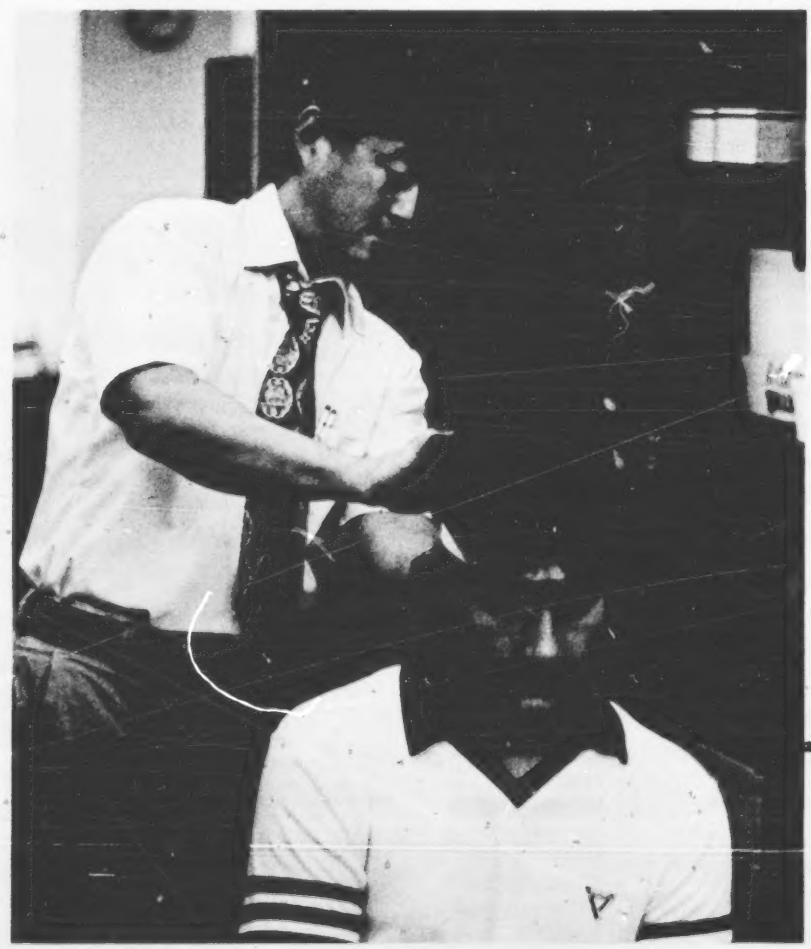
In all these and many other areas, thinking and planning are now under way, and focused research activity will begin as soon as appropriate personnel and the funds to support them can be located.

The need for new knowledge, new methods, better devices, deeper understanding is very clear, and the challenge is exciting. These are at least a few of the areas into which the Gallaudet Research Institute plans to expand its activities over the next few years. In all of these areas, a continual concern is that of developing a cadre of well-trained researchers who can carry on this work in the decades ahead. It is, of course, especially important to make this training and these opportunities available to deaf persons themselves. Accordingly, another major objective will be to develop, along with research programs, graduate level and especially doctoral level academic programs to prepare persons, both hearing and deaf, for the challenges ahead in research.

Educational Research

Deafness has such a substantial impact on the individual that, despite generous endowments of intellectual ability and energy, half of the hearing impaired youth who leave secondary education at the end of their teens read at a fourth grade level or below. Given this enormous challenge, the goal of the Educational Research Laboratory (ERL) is to define major components of this state of affairs and to develop the understandings, the materials, and the methods and procedures which, when put into practice, can result in improved instruction and a higher level of educational achievement for deaf students.

The ERL, established in its present form in 1979, is an outgrowth and integration of work previously carried out by two separate research groups, one at the Kendall Demonstration Elementary School, the other at the Model Secondary School for the Deaf. The combined group, the largest in the Research Institute, aims to address major issues and problems in educational research, across both elementary and secondary levels. Because of the broad scope and great diversity of these educational research issues and problems, the ERL is headed by three senior research professors: Dr. Tad Uno, Dr. Kathryn Meadow, and Dr. Donald Moores.



Dr. Tad Uno, head of the Learning and Cognition Studies Group, attaches the electrodes to a volunteer subject in a study of cerebral hemisphericity.

Learning and Cognition Studies Group

This group, headed by Dr. Tad Uno, conducts a wide variety of studies broadly related to issues of learning and cognition in deaf individuals. These include studies of the cognitive capabilities of deaf students, with special attention currently being given to spatial reasoning abilities. The foundations have also been laid for the development of a major emphasis on neuropsychological issues relating to the learning of deaf children. These include studies of cerebral hemisphericity, the use of bio-feedback measures in anxiety and tension reduction, and the use of neurological and other physiological measures in studying the capabilities and accomplishments of hearing impaired youth. Some members of this group have devoted considerable attention to the development of theoretical models for

Carol Erting (l.) and Ronald Reed prepare to analyze videotapes of mothers interacting with their deaf children.

describing the language development of deaf children and in relating these models to the findings of empirical research and to the day-to-day practice of education of hearing impaired children.

Child Development Studies Group

The work of this group, headed by Dr. Kathryn Meadow, is directed toward the understanding of the psychological and social development of hearing impaired individuals from infancy to adulthood. Among the projects being undertaken by this group are long-term studies of parent-child interactions, of the self-image of hearing impaired children and adolescents, and of the development of the methods and materials needed to measure the phenomena under study.

Some of the work of this group is devoted to studies of the development of reading ability of hearing impaired children, using a miscue analysis procedure, and of the development of pre-writing and writing behavior in young deaf children.

Personnel are also involved in the development of materials and training procedures which can assist deaf parents and the parents of deaf children with information on child rearing, and which can assist classroom teachers in using the most recent research results in fostering the development of language and reading skills in their children.

Dr. Kathryn Meadow is head of the Child Development Studies Group of the Educational Research Laboratory.

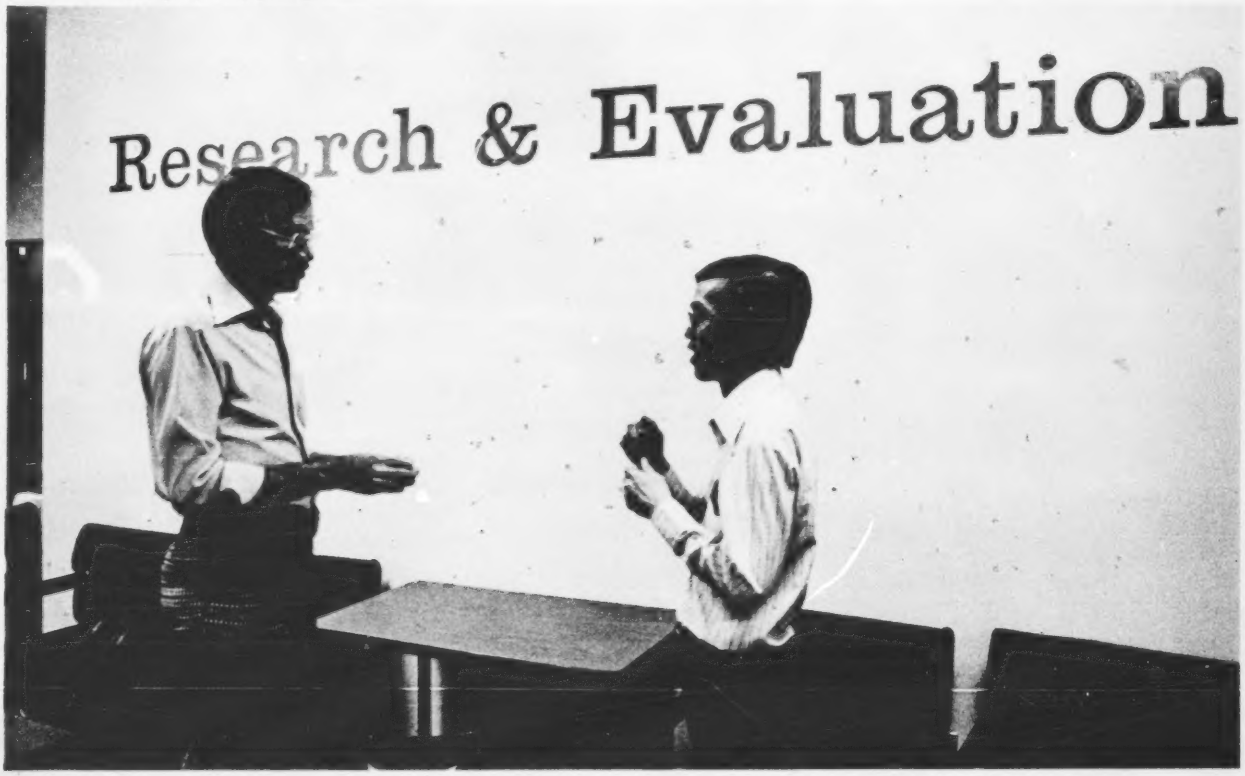
Assessment and Teaching Studies Group

This third group, headed by Dr. Donald Moores, addresses its work to issues surrounding the educational and psychological assessment of hearing impaired children, and the subsequent teaching or educational treatment of the children. This includes attention to the test materials and procedures used, the skills and abilities of the test administrators, and the entire process of extracting prescriptive information and conveying this information to teachers and other professionals who are expected to put the results into practice in the classroom. Their work includes examining existing and proposed assessment procedures, and developing or modifying these procedures in order to improve assessment in the educational setting.

The second major area of this group's work is in the study of teaching, with detailed studies of actual student and teacher behavior in the classroom, the interaction of these two, and the effects on educational achievement. Past studies have examined students' processing of questions during classroom interactions, the time students spend "on task" as related to their achievement levels in

Dr. Donald Moores joined the Educational Research Laboratory in 1980 as head of the Assessment and Teaching Studies Group.

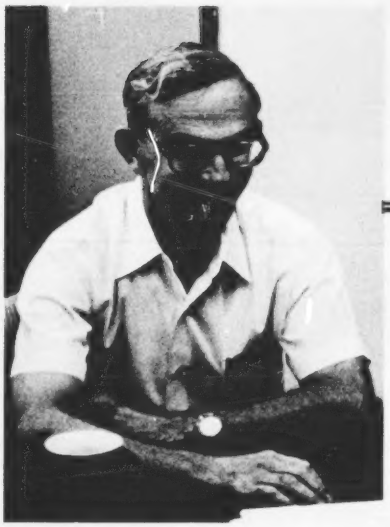
Dr. John Schroedel (l.) and programmer Chi Lee work out data analysis requirements for a new study of cross-generational economic mobility of deaf young adults.



mathematics and reading, and the grammaticality of the signed communications of teachers in the classroom. Continuing work in this area will focus upon the actual, as opposed to the prescribed or presumed, behavior of teachers and students in classrooms, with emphases on improving the efficiency of these interactions and on the training of new teachers of the deaf and upgrading the skills of those already in practice.

Other Functions of the Laboratory

In addition to pursuing work in the three broad areas of educational research described above, members of the laboratory provide a wide variety of teaching, service, consulting, and other research activity. For example, research faculty members are involved in the development of a doctoral program in special education research and in the teaching of graduate level research-oriented courses on campus. In addition, they are involved in a variety of institutional research studies, by which is meant the examination of the various student bodies on the Gallaudet campus, for the purpose of developing information useful for program planning and management, including such matters as follow-up studies of the graduates of Gallaudet programs, and monitoring the personal and academic characteristics of currently enrolled students. Staff members of the laboratory also conduct a wide variety of consulting activities both on and off campus, in which they assist others in designing and conducting research and evaluation studies in the area of education of the deaf and education generally.



Dr. Stanley Guterman, a sociologist, has just come from Wayne State University, to work with the Educational Research Laboratory.

In summary, the ERL is engaged in a variety of research programs which will lead to the improvement of instruction and the enhancement of the educational achievement of hearing impaired persons. ERL researchers share the results of their work with other researchers and with practitioners alike, assisting whenever possible to incorporate or implement empirically demonstrated procedures and principles into educational experiences on the Gallaudet campus. With the development of fully operational research programs in each of the major areas outlined above, the ERL looks forward to a better understanding of the educational needs of deaf persons in the decade of the 1980's, and to even more significant contributions to the total education and development of hearing impaired children.

Linguistics Research

The Linguistics Research Laboratory (LRL) began in 1957 as the Linguistics Research Program, an after-hours and summer-months activity of its present Director, William C. Stokoe, then Chairman of the Department of English. In 1971 it became a full-time activity, with a director and a clerk-typist. In 1978 the LRL became part of the new Research Institute, the operations arm of the Division of Research. The LRL now consists of the director, two research associates, and an administrative secretary.

Since 1971, grants from the National Science Foundation and the National Institutes of Health have nearly matched the College's funding of the Linguistics Research Laboratory. Although its small base requires that the LRL operate on a project-to-project basis, rather than on a broad program of sign language and English language research, the peer-reviewed proposals and competitively awarded funds generated by Dr. Stokoe and his staff since 1960 have given the LRL a continuity and productivity characteristic of much larger operations.

Grant-supported projects have had two far-reaching effects: 15 young deaf and hearing researchers have served apprenticeships in the LRL and taken with them into key academic and scientific posts valuable experience gained in their temporary connection. Almost as many basic works on sign language linguistics have come from the grant-supported projects, and now serve as fundamental references and resources in libraries and research offices throughout the United States and around the world.

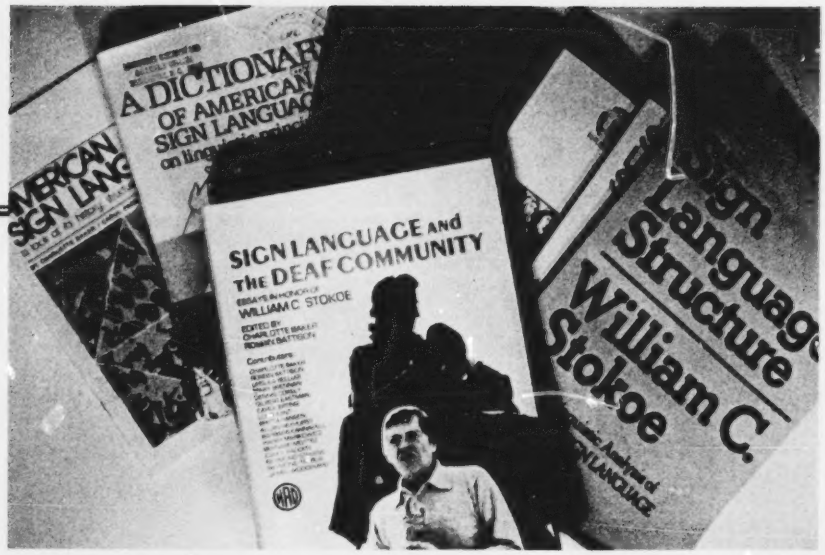
Basic Research

The LRL seeks information about language and about the languages used in the natural groupings, including the subcultures, of deaf people and in their communication with hearing people; for deafness constrains universal human language capacity to find its primary expression in visible, not audible, symbols. The whole scope of the potential LRL program ranges from psycholinguistics—how deaf children acquire and develop competence in sign languages, other languages, become literate, process language units, and function cognitively—to sociolinguistics and social anthropology: how deaf people construct their world and experience to deal with common human needs, since their primary system for interaction is so different in mode from speech. Near the middle of this range of research, more specifically linguistic questions are addressed: how American Sign Language differs from English and how it resembles it, other spoken languages, other gesture systems, and invented manual codes. What is the grammar of sign language like?

Applying Results

The questions above are basic, but basic research often brings unanticipated benefits. The LRL, besides doing basic research, as far as its resources permit seeks to apply research results to specific problems and to supply the information it dis-

Dr. William Stokoe (r.) chats with M. J. Bienvenue, research assistant at the Linguistics Research Laboratory.


A DICTIONARY OF AMERICAN SIGN LANGUAGE
SIGN LANGUAGE and THE DEAF COMMUNITY
WILLIAM C. STOKOE
Sign Language Structure
William C. Stokoe

Much of the major work on American Sign Language was authored by Dr. William Stokoe and his colleagues at the Linguistics Research Laboratory.

covers and collects to parents and teachers of deaf children and to educational planners who have need of such information. The LRL performs services both on the Gallaudet campus and off; it conducts seminars for sign language teachers, evaluates the writing of secondary school pupils, consults with instructional departments, and—in time literally borrowed from research projects—it offers courses in sociolinguistics, sociology of language, and sign language structure.

The LRL also publishes a bimonthly newsletter, *Signs for Our Times* mailed to some 2,000 readers; and a professional journal, *Sign Language Studies*, edited by the Director of the LRL and published for subscribers by Linstok Press, Inc. An extensive special library of books, papers, tapes, and films is available for use by qualified visitors to the lab; and a growing computer-searched data base incorporates the above (in cooperation with the Edward Miner Gallaudet Library).

New Directions

The development of a Department of Linguistics in the newly established School of Communication will ensure that at least some undergraduate, graduate, and special students will encounter some linguistic knowledge useful in their future work. Present projections call for additional staff in the LRL to serve the growing demands for scientific information, especially for its translation into terms and contexts better known to teachers and parents of deaf children than are reports in technical journals. Meanwhile, as it has been doing for eight years, the LRL continues to provide for local, national, and international clients.

What kind of research would an expanded program undertake? The LRL has four major objectives: the first two are in applied linguistics:

1. To develop teaching materials using the latent research findings about
- Sign Language
- Deaf Students' Language Abilities
- Translation (signed to spoken and spoken to signed language)

2. To explore the whole subject of interpretation and translation and gain solid knowledge about skills and training needed as well as measures of goodness of translation and effectiveness of communication.

The other two in basic research are:

3. To maintain the Gallaudet College lead—LRL was the first and still is the foremost source of new knowledge about signed languages—by further analysis of American Sign Language and other sign languages.

4. To explore the inseparable cultural context of language, the Deaf community, its communication networks, structure, and special features.

Charlotte Baker (l.) and Dennis Cokely review videotapes of non-manual behaviors in the American Sign Language of deaf native signers.

Dr. R. Orin Cornett demonstrates one of the hand positions of the Cued Speech system, which clarifies ambiguous features of the spoken word seen via speechreading.

Cued Speech

The Office of Cued Speech Programs is the outgrowth of part-time research and development by Dr. R. Orin Cornett, while he was Vice President of Gallaudet College. Shortly after arriving at Gallaudet, Dr. Cornett developed a system, which he called Cued Speech, for the purpose of assisting hearing impaired persons to speechread, by providing them with manual cues to differentiate sounds which otherwise look the same on the lips. Because many of the sounds of English (or of any other language) are not visible on the lips, and because a good proportion of what is visible is ambiguous (e.g., "b"and "p" look alike), it is impossible for speechreading alone to provide a complete, clear visual representation of the spoken language.

This is a significant enough stumbling block in the use of speechreading for everyday communication, but it is a far more serious problem for young deaf children who are faced with the challenge of trying to acquire the spoken language of their surroundings. The Cued Speech system was designed to complement the visible features of the spoken language so that the combination of speechreading and the cues provides a complete and accurate visual representation of the sounds of the spoken language.

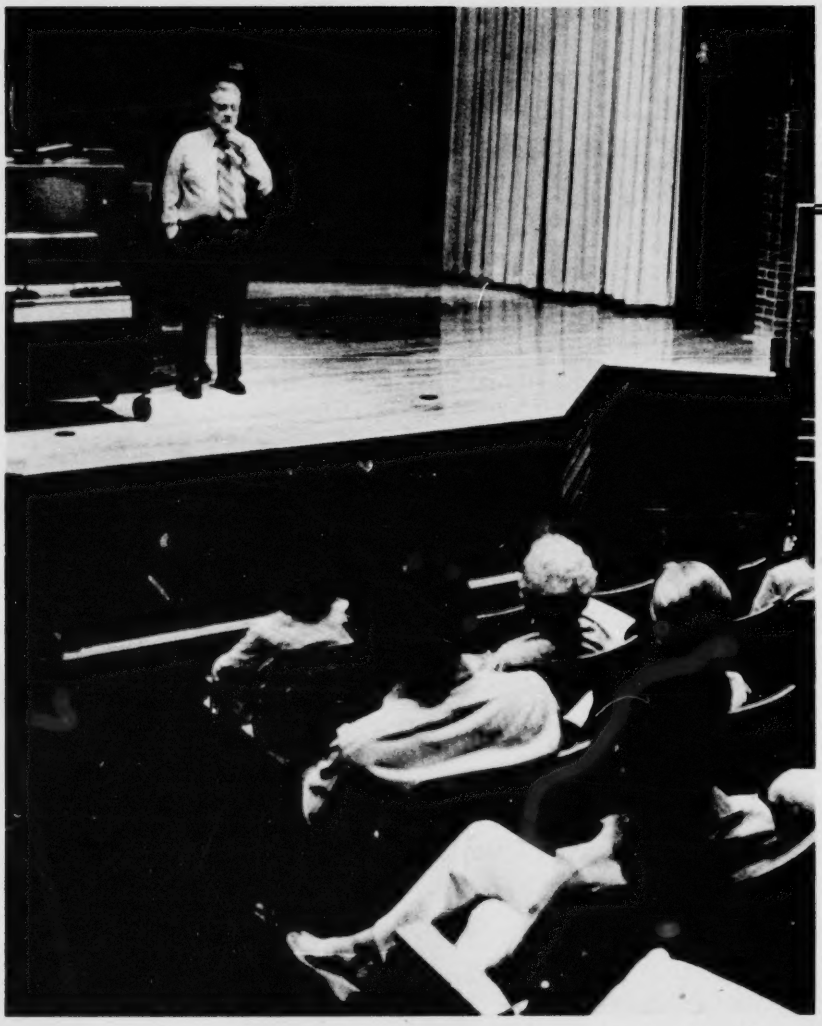
In this regard, the Cued Speech system is fundamentally dissimilar to sign-based systems, which convey *meanings*, whereas the cues convey information about the *sounds* of the language. As a result, Cued Speech and sign systems are not incompatible or in conflict with each other; each has a distinct and separate purpose and function. To an increasing though still limited degree, deaf individuals and their families are beginning to use both signing and Cued Speech, each for its respective purpose and in the appropriate setting. In more recent years, Dr. Cornett has turned his full-time attention to development and adaptation of the Cued Speech system to 20 languages in addition to English, and has promoted its use in the United States and abroad.

In collaboration with other educational researchers, the Cued Speech research group engages in research on the effectiveness of Cued Speech in a variety of situations, including work-study programs and schools and classes for deaf children. The laboratory is also engaged at present in a substantial collaborative program, with the Research Triangle Institute of North Carolina, for the development and field testing of a wearable speech analyzing speechreading aid (Autocuer) for deaf persons. One limitation of Cued Speech (as of any communication system or any language) is that both parties to a conversation must be skilled in its use. The speechreading aid is designed to overcome this limitation by producing the cues electronically and automatically, without the need for the speaker to perform the manual cues of the original system. This requires a speech-analyzing system capable of making the requisite distinctions among the sounds of speech (such as "b" versus "p"), and a cue-producing function which can provide the visual equivalent of the manual cues. Once the technological problems are solved or by-passed, and the device itself is in a usable configuration, the issue of developing appropriate training procedures in the use of the device remains to be addressed. Funding for this project began with a contract from the National Institute of Neurological and Communicative Disorders and Stroke, and continues with funds from the National Aeronautics and Space Administration, as well as Gallaudet College.

The present activities of the Office of Cued Speech Programs can be divided into three principal areas: direct services, research and development activities, and support of Gallaudet instructional programs.

Direct service involves dissemination of materials and information to persons and programs interested in or

A student practices with the laboratory version of the automatic cueing device.



Dr. Cornett conducts one of many training sessions on the development and use of Cued Speech.

already using Cued Speech, instruction in the system, and assistance in adapting it to educational programs for deaf students.

In addition to its research on the applications of Cued Speech to educational settings and the lipreading aid mentioned above, the Office is also developing new and improved orientation and instructional materials and methods of teaching, learning and using Cued Speech, for use by teachers and other professionals, by parents and siblings of hearing impaired children, and by hearing impaired children and adults. In the pilot stage is a home instruction package which uses a combination of videotape, audiotape, written materials, and telephone consultation for meeting the needs of geographically isolated families with hearing impaired children. This program places a videocassette player in each home and furnishes materials for use by parents and children in learning and using Cued Speech, and in helping the hearing impaired child to develop language.

In the planning stage are two minor projects: the evaluation of the effectiveness of Cued Speech in solving the communication problem of deafened adults, and of the effectiveness of videotaped materials used in the home; and a study of the effects of Cued Speech upon reading skills.

Mental Health Research

Although, nationwide, mental health care for deaf people is still inadequate in quantity and variable in quality, in recent years a growing interest among consumers and professionals has prompted the establishment of many new mental health programs in both hospital and community settings. Some of these programs have developed sufficiently in size and sophistication that they are able to serve as valuable models for the establishment or expansion of similar services for deaf citizens in other parts of the country.

While clinical service programs have been expanding, however, there has been a much more limited growth in research and evaluation activities designed to monitor and improve the care being provided. Funding of the mental health service programs is often very limited, with little or no provision available for the time, personnel, and supporting resources necessary to the conduct of creditable research. As a consequence, this welcome expansion of services is taking place largely without the benefit of systematic assessment of the effectiveness (and therefore of the desirability) of employing various methods and approaches.

In response to this set of affairs, Gallaudet College has established within the Research Institute a new program of studies on mental health in deafness. Initiated in the fall of 1980, the research program will be headed initially by Dr. Barbara Brauer, a clinical psychologist with extensive experience in mental health service to deaf people. She will take the lead in designing and initiating a program of studies on major issues in mental health services for deaf people. These include addressing the relative effectiveness of various therapeutic techniques for the variety of deaf clients receiving mental health services; the pros and cons of employing an interpreter in the psychotherapeutic setting; and the accuracy and dependability of existing psychodiagnostic instruments when employed with deaf individuals. Research on these and other pressing issues will be undertaken in collaboration with existing mental health programs for the deaf throughout the country, and in consultation with the Center on Deafness at the University of California, San Francisco, the only other group currently devoting substantial attention to research in the area of mental health and deafness.

Dr. Barbara Brauer administers a psychological test as part of a study on the mental health of deaf individuals.

Expansion of the work of this research program will depend upon the development of adequate and continuing sources of financial support. Work is already under way in this regard. In addition, the work of the Mental Health Research Program will be planned and developed as much as possible in concert with the Continuing Education activities in the area of mental health being planned by Gallaudet's National Academy, and with the Graduate Training Program in the area of clinical psychological services to deaf persons being planned by the Department of Psychology in Gallaudet's College of Arts and Sciences. The years just ahead should prove to be most fruitful in the development of a coordinated program of teaching, research, and service in the area of mental health at Gallaudet.

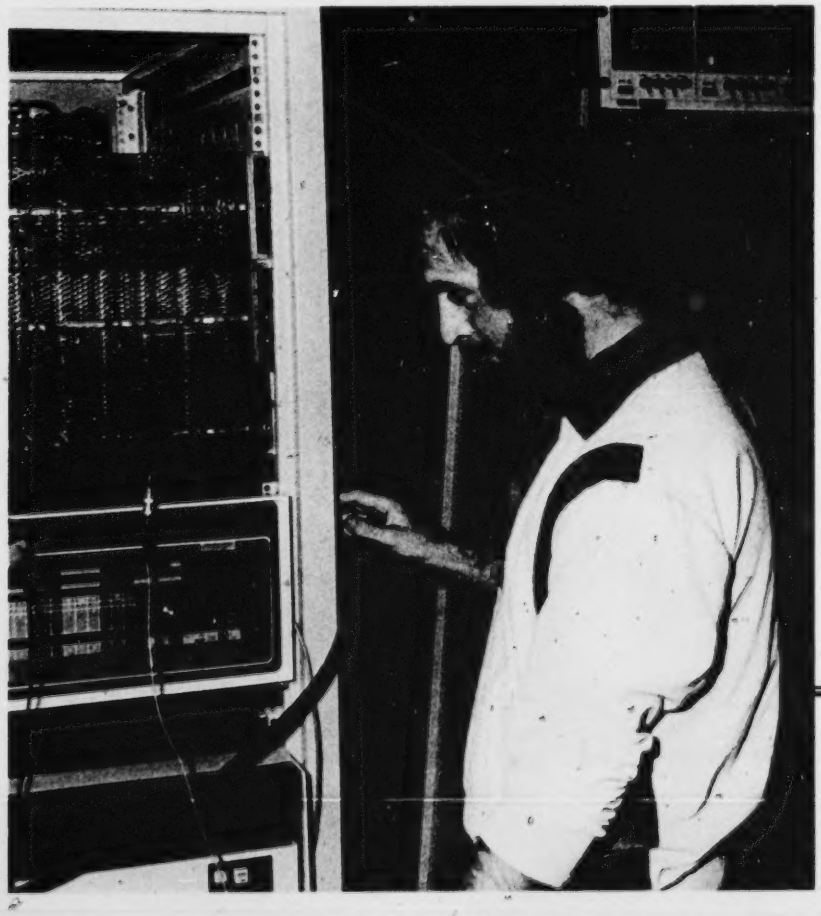
Sensory Communication Research

The purpose of the Sensory Communication Research Laboratory (SCRL) is to perform research that will lead to improved speech communication for persons with impaired hearing. The SCRL, under the direction of Dr. James Pickett, studies the speech and hearing of such persons especially with a view to the development of new sensory aids to communication. Normal speech communication is studied also to provide reference data when necessary. The Laboratory was established in 1964 to concentrate on research for speech communication as a complement to the College's educational, clinical, and research activities.

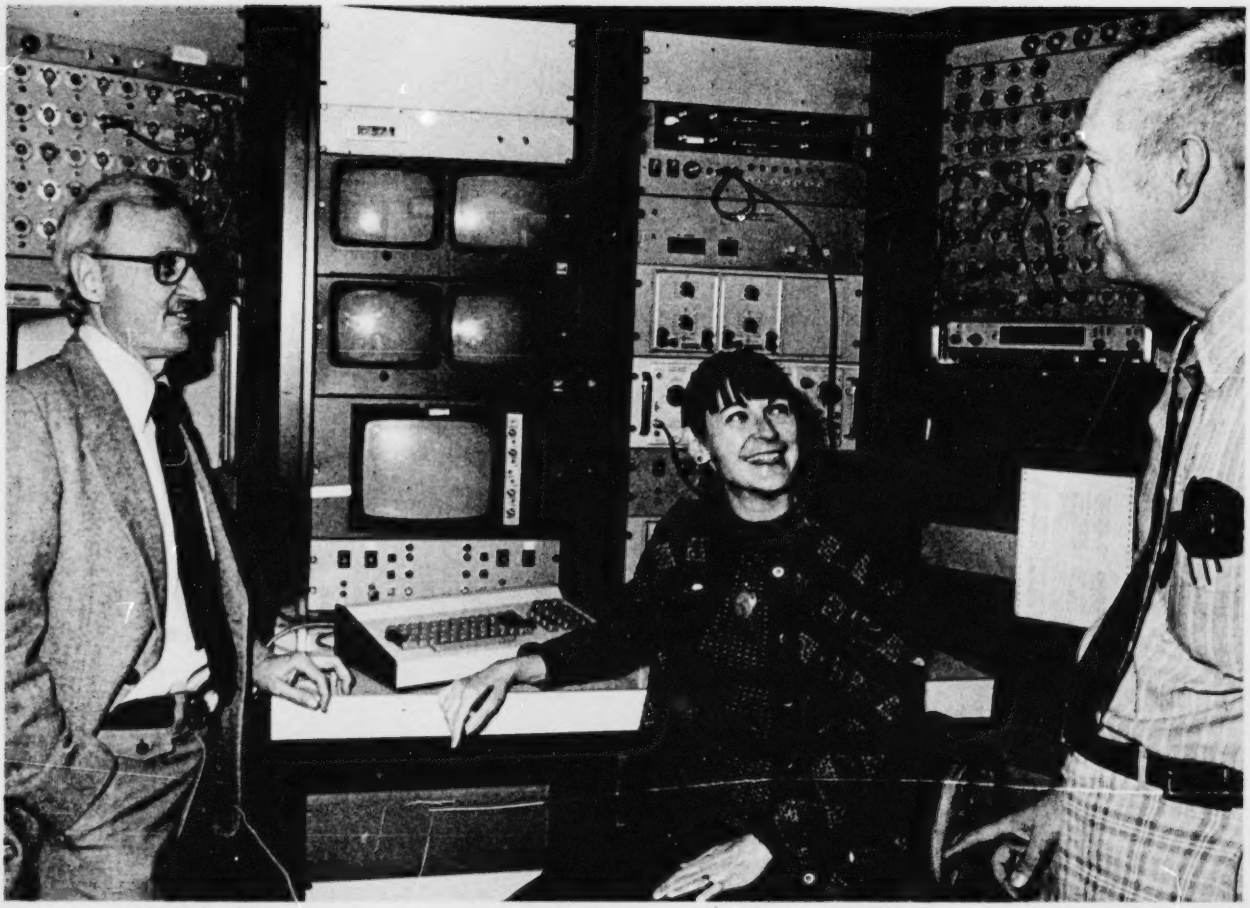
Sensory communication research is designed especially to take advantage of the large accumulation of knowledge and techniques that has occurred in the past 35 years in the fields of acoustics, phonetics, and psycholinguistics. Phonetics has provided detailed knowledge of speech movements and the resulting sound patterns. Speech can now be synthesized and analyzed automatically under computer control. Psycholinguistic research, using both natural and synthetic speech, has provided an extensive knowledge of the sound cues in speech that are the basis of speech perception and understanding. In parallel with these basic advances, electronic and computer research has developed a speech technology with many powerful applications.

This knowledge and technology provide an important new basis for improving speech communication for hearing-impaired persons. For example, special analyzers can now be built to provide indicators for monitoring one's own speech. Several such analyzers have been incorporated in experimental prototypes of new hearing aids and voice displays. It is also easy now to synthesize special types of speech sound in order to investigate the critical sound patterns or cues to speech perception that are lacking to hearing-impaired people.

The research of the Laboratory is both basic and applied, because basic research and applied practice can interact in important ways. On one hand, effective applications depend on having good basic knowledge of the processes to be affected. On the other hand, attempts to apply a technique or a theory can uncover critical gaps in basic knowledge and lead to the discovery of new principles of a process.



Electronics engineer Eugene Herbert prepares a computer component for the next experiment.



Lab director Dr. James Pickett (l.), Dr. Sally Revoile, and Fred Brandt seem pleased with progress on one of their experiments.

Research on Hearing

The basic research of the Laboratory is designed to improve knowledge of impaired reception of speech due to impaired hearing. This work is aimed at discovering and defining the types of distortions that hearing impairment imposes on the received patterns of speech sounds. Exactly how are the sound patterns blurred or muffled? If this were known, it might enable the design of special hearing aids that would compensate, as eyeglasses do for distorted vision.

Speech sound patterns are now understood fairly well, both as to their acoustic properties and as to the normal auditory process for perceiving these properties. SCRL's experiments on sound-pattern discrimination began by using sounds of complex composition, but not actually speech-like, in the patterns to be discriminated. The aim was to explore the range of discrimination across the spectrum of hearing when the received sound is amplified enough to be comfortably audible. Acuity for discriminating low-pitched sounds from each other was often found to be better than for the middle range of pitches. However, this varied a great deal depending on the individual hearing impairment.

The next step was to test the hearing acuity for discriminating among speech sounds. For this purpose, speech sounds were synthesized by computer and controlled according to the listener's own success in discrimination. With this method, the amount of impairment can be quickly determined. Vowel sound discrimination was measured first. Since the speech synthesizers can also produce patterns like consonant sounds, a series of tests of discrimination for sound patterns of consonants was also carried out. Results were found to be related to the listener's ability to discriminate natural speech sounds.

Research on Speech

SCRL also studies the basic nature of the speech of deaf persons in relation to their hearing and language capacities. This has been a smaller portion of the Lab's work thus far. SCRL researchers have developed a highly

Fred Brandt (l.) and Lisa Holden review computer-synthesized speech sound patterns.

advanced computer model of the process of speech production which is used to discover new methods of voice monitoring for speech training. This line of research will be pursued further but will be more closely tied to development-oriented work on new aids to communication that employ current speech technology.

Research on Sensory Aids

Applied research in the Laboratory investigates new communication aids which are based on microprocessor analysis of speech. Two types of special aids have been investigated: (1) aids to speech reception and (2) aids to monitor one's own speech production. Some of the proposed aids employ visual displays of speech patterns; other provide altered sound patterns designed to better fit the remaining hearing of deafened persons.

The Laboratory tested a speech reception aid (the Upton Eyeglass Speechreading Aid) which operates to provide the wearer with visual patterns that assist in lipreading. Results have been encouraging.

The speech-monitoring aids have been designed and built as speech training aids for deaf persons. One such aid was constructed in the Laboratory and pilot-tested at Kendall School.

In 1967 and 1977 the Laboratory organized major international research conferences on speech-processing aids for the deaf. These conferences and their published proceedings serve as bench-marks for accelerated progress in these fields.

In addition to work with special speech-analyzing aids, the Lab has carried out research on the function of conventional hearing aids. Speech is naturally constructed around hearing, and the bulk of hearing-impaired persons have a considerable amount of residual hearing, often benefiting greatly from wearing hearing aids. Nevertheless, hearing aid use is far from optimal. There are persistent reports of poor "word clarity" and of extreme difficulty in noisy places and in reverberant rooms. To shed further light on these problems, we have carried out research on individual adjustment procedures for hearing aids and on binaural *vs.* monaural use of hearing aids in a room with noise and reverberation present in varying degrees.

Speech Technology Development for the Deaf

SCRL has played the major role, among all deafness research groups, in fostering the use of emerging technologies in research and application to problems of speech communication. Currently, though, there are no commercially viable applications of speech technologies specifically for the deaf. However, the technology is now in an explosive phase due to new microprocessor techniques that make it feasible to wear miniaturized processors that formerly required the space of an entire room. Also recent designs for automatic speech-understanding and speech synthesizers have improved greatly in performance. SCRL expects to continue and further develop its program to eventually bring these potential applications into practice.

Signed English Research

A considerable amount of evidence suggests that a visual-manual system might assist hearing impaired children in learning English. However, there are two basic problems associated with such visual-manual systems. These are (a) how accurately they represent English and (b) how easily they are learned and used by the children and their language models, i.e., their parents, siblings, teachers, and friends. The Signed English system developed by Dr. Harry Bornstein attempts to respond to both problems. It is derived from the American Sign Language and altered enough to be a reasonable approximation of English which can be learned and used without excessive difficulty.

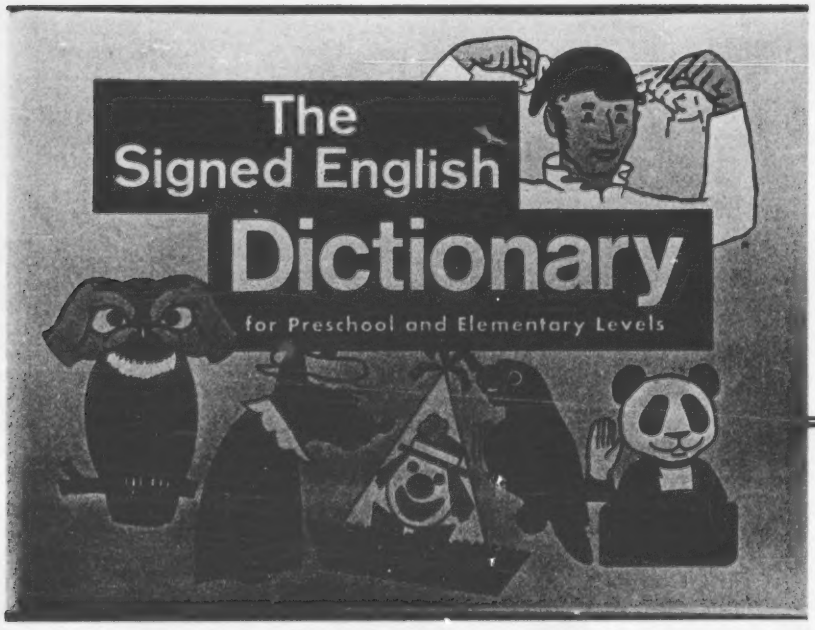
The basic system logic requires a way to modify sign words to parallel English. A set of 14 sign markers has been developed to indicate plurals, tenses, possession, and so on. The manual alphabet is used to add words or endings as needed. As an additional visual cue, the first visible phoneme of each word is shown on the lips of the characters depicted in the Signed English books.

Dr. Bornstein and his staff are presently engaged in three major activities. The first and core program is the design and development of the manual system. Integral to the system is a set of tools or teaching aids which are used by teachers, parents, and children. This second activity, underway for more than eight years, is largely complete. The products include a dictionary of sign words and an integrated set of about 60 books and posters. These teaching aids are designed to be appealing, to produce related vocabulary in full English language contexts, to motivate the child to acquire information from books, and to familiarize the child with important life experiences and classic children's stories and fairy tales.

Project staff work closely with teachers and parents of deaf children to ascertain their needs and obtain clues as to how these needs may be better met. Indeed, scripts for several of the Signed English books were prepared by teachers. In like manner, materials are frequently tried out in classrooms and in homes rather than in the laboratory in order to obtain more realistic assessments of the utility of the materials. On the other hand, "field" research of this sort rarely yields clear and unambiguous findings.

Signed English is introduced into the home as early as possible to provide parents with necessary, basic vocabulary. As the child grows, parents can read stories, sign songs, and recite rhymes to the child. The Signed English books also provide information on safety, manners, and how to perform necessary tasks.

The third major activity of the Signed English Lab is evaluation of the system. Rather than wait several years for a laboratory evaluation, evaluations of system effectiveness have been conducted in schools during the course of system development. A first report was completed in 1980 and published in the *American Annals of the Deaf.*



An important part of the work of the Signed English Research Program is the production of specially designed materials, such as this dictionary.

Program director Dr. Harry Bornstein (center) and Karen Saulnier (r.) assist a teacher of deaf children in mastering the Signed English system, using some of the many printed materials available.

It seems clear from this evaluation that use of the Signed English system will facilitate English language acquisition. We still need to know, however, under what circumstances children will profit best from the use of the Signed English system and just what levels of English skill can be achieved by most children.

The next major task faced by deaf children is to learn how to read English. Children must learn to associate the signs of Signed English with printed words, begin to dispense with the signs, and then learn to handle the printed words alone. In order to accomplish this, we believe that a set of specially designed readers will be required. Given requisite resources, individualized readers could be designed to fit each child. Each sign known by the child would be coupled with a printed word and both associated often enough for that child to cease to need the sign any longer as a reading cue. Alternatively, children who were roughly similar in language development could be grouped together and materials developed for their particular range of reading skill.

In either case, the basic strategy that must be explored is the use of sign drawings as prompts on the written page. The object of the Lab's research will be to determine what combination of sign drawing characteristics will interact best with the English already known by the child to enhance the desired transfer to print. This is a novel approach to the teaching of reading and will require a series of experiments to make these determinations. It is likely that these experiments will take three to five years to complete.

Demographic Studies

The Office of Demographic Studies (ODS) occupies a unique position in the field of education of deaf and hard-of-hearing children in the United States. Established in 1966, the basic mission of the Office has been to study and report on the characteristics of deaf and hard-of-hearing children and youth receiving special educational services and the characteristics of the educational programs that serve these students. The goal of the Office is to provide, on a national and international basis, information and data-based services which can assist in improving educational opportunities for hearing impaired people. Dr. Michael Karchmer has served as Director of the Office since 1978, with Dr. Stephen Wolk as Assistant Director. Previous directors were Mr. Gus Gentile, Dr. Peter Ries, and Dr. Raymond Trybus.

The primary project by which the Office carries out its mission is its Annual Survey of Hearing Impaired Children and Youth. Through this project, the Office collects educationally relevant data on the large majority of school-aged hearing impaired children in the United States receiving special education services because of hearing loss.

The Annual Survey was begun in response to the needs of educators, audiologists, legislators, psychologists, and others working in the field of hearing impairment to have national data for purposes of research and educational planning and monitoring. Funding for the project initially came from Gallaudet College and from the U.S. Department of Health, Education and Welfare, Bureau of Education for the Handicapped (now the Office of Special Education, U.S. Department of Education); later, the National Institute of Education provided support. Since 1974, the Annual Survey as well as the Office's many other activities have been supported almost entirely by Gallaudet College.

The Annual Survey is now in its 12th year of national data collection. During its first year, the 1968-69 school year, efforts were directed at studying all of the students at special schools for the deaf, plus a representative sample of students in other kinds of educational programs. Altogether, information on about 25,000 children was compiled. Since 1968, the Survey has expanded greatly. In the Annual Survey for the 1978-79 school year, information on about 54,000 hearing

Research assistant Susan Jablonski and Assistant Director Dr. Stephen Wolk examine results of a longitudinal study of deaf children's educational achievement.

Clara Gillespie (l.) and Kathleen Berault review replies to the Annual Survey of Hearing Impaired Children and Youth.

impaired students from perhaps 2,500 different schools or special education classes across the United States was reported to the Office. The educational programs represented in the Survey included not only residential and day schools for the deaf, but also those encompassing the full gamut of full-time and part-time special education services offered deaf and hard-of-hearing students across the United States.

In addition to the nation-wide Annual Survey, the ODS has contracts with the State Departments of Education in Texas and Louisiana to do in-depth studies of their hearing impaired students and to develop pupil data management information systems for those states. Similarly, the ODS worked with Canadian special educators to develop the first national data on hearing impaired children and youth in that country. In conjunction with other researchers of the Research Institute, ODS has recently completed a study of deaf people at public psychiatric hospitals in the United States. The Office has also conducted surveys to address a variety of other topics: on the psychological service providers who serve deaf children; on curriculum materials used by schools for the deaf; and on communication methods used by deaf children in the United States. The Office also engages in work other than survey research. ODS personnel are heavily involved in a project supported by the Spencer Foundation to study cognitive strategies used by deaf children; similarly Office staff have collaborated with Dr. Kathryn Meadow in the development of a social-emotional behavior inventory for use with deaf students.

Throughout its years of operation, ODS has been engaged actively in studying the academic skills of hearing impaired students as reflected by achievement test scores. To date, the Office has conducted four national achievement testing projects—in 1969, 1971, 1974, and 1979. The most ambitious of these was the spring, 1974 program in which the Office modified the 1973 edition of the Stanford Achievement Test to make it appropriate for children with hearing loss, and normed the revised test on a representative sample of nearly 7,000 hearing impaired students. As a result of this 1974 project, there is now available for the first time a full battery of achievement tests for deaf students covering a range of content areas in six levels of difficulty. This achievement test battery, called the Special Edition for Hearing Impaired Students of the Stanford Achievement Test (SAT-HI) is available from the ODS. Since its publication six years ago, the SAT-HI has become the most widely used achievement test for deaf students in the United States.

Nearly all of the activities of the ODS have a dual orientation: to service and to research. Projects are designed and carried out so that potential results can be put to practical use. A United States-Canadian Advisory committee assists the ODS in insuring that its projects are relevant, timely, and well-designed. This Committee meets annually to discuss the state of education for hearing impaired children in the United States and Canada and to recommend future projects to the Office. Committee members include researchers,

Russell Perkins prepares a shipment of the revised achievement test materials for deaf students.

Linda Petersen (l.) and Dr. Thomas Allen test the mini-computer program for the Spencer Foundation study of the cognitive strategies used by deaf children.

educators, administrators, and others within the field of deafness.

The ODS uses the data it collects for research purposes and disseminates the results of these studies by means of several series of monographs. The results of ODS projects are also reported in other books and journals, and are presented at professional and scientific meetings, conventions, and workshops. Because the studies conducted by ODS represent a collaboration by thousands of professionals, the data are shared with independent investigators to increase their usefulness. There is one restriction which the Office observes scrupulously when it shares data and when it reports findings: no data are released which might permit the identification of an individual student or participating program.

The unique value of the Office lies in its national and international perspective and in the far-flung network of contacts and working relationships which it has developed in its 14 years of existence. Office personnel are constantly striving to expand and improve these working relationships for the betterment of the education of the hearing impaired children we seek to serve.

Dr. Stephen Wolk, Brenda Rawlings, and Dr. Thomas Allen compare ODS results with Census Bureau figures for the general population.

ODS Director Dr. Michael Karchmer reviews plans for analysis of national data files with programmer John Woo.

United States- Canadian Advisory Committee of the Annual Survey of Hearing Impaired Children and Youth

Dr. John Boyd
Superintendent
The Robarts School
London, Ontario, Canada

Dr. Donald Calvert
Director
Central Institute for the Deaf
St. Louis, Missouri

Mary Campbell
Supervisor
Plymouth-Canton Community Schools
Plymouth, Michigan

Dr. William Castle
Vice President, RIT, and Director
National Technical Institute for the Deaf
Rochester, New York

Dr. James Collins
Associate Professor and Assistant Chairman
Faculty for Exceptional Children
College of Education
The Ohio State University
Columbus, Ohio

Dr. Sara Conlon
Executive Director
Alexander Graham Bell Association for the Deaf
Washington, D.C.

Dr. Harvey Corson
Superintendent
Louisiana School for the Deaf
Baton Rouge, Louisiana

Gary A. Curtis
Director of Education for the Deaf
Texas Education Agency
Austin, Texas

Dr. Robert R. Davila
Vice President
MSSD/KDES
Washington, D.C.

Gordon Duck
State Director of Special Education
Office of Special Education
Sacramento, California

Lucille Epstein
Coordinator of the Hearing Impaired Program
Dade County Public Schools
Hialeah, Florida

Dr. John D. Harrington
Director
Bureau for Hearing Handicapped Children
Brooklyn, New York

Dr. Jamie MacDougall, Chairman
Director of Research
MacKay Center for Deaf and Crippled Children
Montreal, Quebec, Canada

Dr. Jerome Schein
Director
Deafness Research & Training Center
New York University
New York, New York

Keith Tolzin
Superintendent
Idaho State School for the Deaf & Blind
Gooding, Idaho

Peyton Williams, Jr.
Associate State School Superintendent
Office of State Schools and Special Services
Georgia Department of Education
Atlanta, Georgia

Faculty and Staff of the Division of Research

Thomas E. Allen,
Assistant Professor, Office of Demographic Studies.
A.B., Kenyon College; Ph.D., University of Minnesota (Educational Psychology).
Dr. Allen's primary responsibility is in research on achievement tests for school aged hearing impaired children.

Charlotte Baker,
Research Associate, Linguistics Research Laboratory.
B.A., Clarke College; M.A., University of California, Berkeley (Linguistics).
Ms. Baker is examining the role of non-manual behaviors in American Sign Language (ASL), particularly to find how they are distributed and used in lexical, syntactic, and discourse subsystems.

Harry Bornstein,
Professor and Director of the Signed English Research Program
A.B. Rutgers University; A.M. Fordham University; Ph.D., American University (Psychology).
Dr. Bornstein has been a member of the Gallaudet College faculty since 1961 and has published extensively in psychological and educational journals. He is the first author of the *Signed English* series. His primary interests are in research measurement, instructional design, and language development.

James W. Bourg,
Assistant Professor, Cognitive Studies Project.
B.A., Florida State University, M.A., M.L.S., Ph.D., State University of New York, Buffalo (Cognitive Psychology).
In conjunction with a grant from the Spencer Foundation, Dr. Bourg is designing and conducting experiments on hearing impaired children's cognitive strategies and cognitive flexibility.

Barbara A. Brauer,
Assistant Professor, Mental Health Research Program.
B.A., Oberlin College; M.A., Columbia University; Ph.D., New York University (Psychology).
Dr. Brauer is developing a program of research on mental health and deafness. She is interested in the study of communication and attitudes as they relate to therapeutic processes.

Dennis Cokely,
Research Associate, Linguistics Research Laboratory.
B.A., St. Mary's University; M.A., American University (Applied Linguistics)
Mr. Cokely is collaborating with Ms. Baker on the task of relating recent research results to the needs of teachers and students of ASL. He is also planning and doing preliminary research on a major study of translation and interpreting that will include linguistic, cultural, attitudinal, and personal aspects of cross-modal interpretation.

R. Orin Cornett,
Professor and Director of the Office of Cued Speech Programs.
B.S., Oklahoma Baptist University; M.S., University of Oklahoma; Ph.D., University of Texas (Physics).
Dr. Cornett's major focus is Cued Speech, and its adaptation to the world's languages.

Carol Erting,
Assistant Professor, Educational Research Laboratory.
B.S., M.A., Northwestern University (Education of the Deaf).
Ms. Erting's major research focus has been in anthropological and linguistic research, including language socialization, development of communication skills, social interactions, and ethnicity and identity.

Carolyn Ewoldt,
Assistant Professor, Educational Research Laboratory.
B.A., M.A., Texas Christian University; Ph.D., Wayne State University (Curriculum Development).
Dr. Ewoldt is conducting research on reading, writing, and language development, including curriculum development and implementation projects for elementary school age children.

Pamela R. Getson,
Assistant Professor, Educational Research Laboratory.
B.S., University of Illinois, Urbana; M.Ed., Ph.D., University of Virginia (Research Methodology).
Among Dr. Getson's research interests and activities are tests and measurements, and language/information processing. For the next several years, she will be examining the effects of student characteristics and test and measurement parameters on the development of assessment devices for hearing impaired students.

Stanley S. Guterman,
Professor, Educational Research Laboratory.
A.B., University of Chicago; Ph.D., Columbia University (Sociology).
Dr. Guterman will collaborate with Dr. Meadow on studies of self-concept in deaf children and other sociological studies. His past work, including two books and many articles and chapters, has focused on personality and intelligence measures as related to social class and minority group membership.

Anna Hauptman,
Assistant Professor, Educational Research Laboratory.
B.A., M.A., University of Maryland (Speech, Communications, and Linguistics).
Ms. Hauptman's major research interests are spatial reasoning, hemisphericity, cognition, mathematics education, and psycholinguistics.

Doin E. Hicks,
Professor and Vice President for Research.
B.A., Arkansas College; M.Ed., Ed.D., Arkansas University (Special Education and Administration).
As Vice President, Dr. Hicks is chief administrative officer for the Division of Research, and also has major campus-wide responsibilities for policy development, promotion, fund-raising, and coordination of research, whether in the Research Institute or elsewhere. He is also President (1980-1982) of the Conference of Educational Administrators Serving the Deaf, and is active nationally and internationally as a consultant and advisor on education of the deaf and the deaf-blind. He also serves as editor of Gallaudet's quarterly journal, *Directions*, and was formerly Dean of Pre-College Programs, in which position he was largely responsible for the development of the Kendall Demonstration Elementary School and the Model Secondary School for the Deaf.

Michael A. Karchmer,
Associate Professor and Director of the Office of Demographic Studies.
B.A., Rice University; M.A., Ph.D., Emory University (Experimental Psychology).
Dr. Karchmer has extensive research experience in the area of childhood development of handicapped children, and in the study of memory and cognition. He came to Gallaudet in 1975, and has served as Director of ODS since 1978. He is also very active in the project, sponsored by the Spencer Foundation, to study the cognitive strategies and cognitive flexibility of hearing impaired children.

Thomas N. Kluwin,
Assistant Professor, Educational Research Laboratory.
B.A., Marquette University; M.A., University of Wisconsin, Milwaukee; Ph.D., Stanford University (Education and Linguistics).
Dr. Kluwin's research program at Gallaudet involves the study of English and linguistic behavior of deaf students and teachers in the classroom, and the improvement of teaching through advanced instruction based on empirical research on the effects of teacher behavior in the classroom.

David L. Knight,
Assistant Professor, Educational Research Laboratory.
B.A., Dakota Wesleyan University; M.A., University of Miami (Educational Research).
Reading, cognition, manual communication, and language development are among Mr. Knight's major research interests. He has been involved in educational research at Gallaudet for the past ten years.

Robin Kranz,
Assistant Professor, Educational Research Laboratory.
B.A., Colorado College; Ph.D., Syracuse University (Instructional Technology).
Dr. Kranz focuses on educational and research applications of microprocessors, data base management, management information systems, data processing, and instructional technology.

Kathryn P. Meadow,
Professor and Head, Child Development Studies Group, Educational Research Laboratory.
B.A., Denison University; M.A., University of Chicago; Ph.D., University of California, Berkeley (Sociology).
Dr. Meadow is currently involved in a variety of research projects related to the sociology of deafness, self-image, social interaction, and the development of instruments for assessing affective and cognitive behavior. Her publications include two books, *Sound and Sign: Childhood Deafness and Mental Health*, and *Deafness and Child Development*, as well as numerous chapters, articles, and presentations.

Donald F. Moores,
Professor and Head, Assessment & Teaching Studies Group, Educational Research Laboratory.
B.A., Amherst College; M.A., California State University, Northridge; Ph.D., University of Illinois (Educational Psychology).
Dr. Moores brings to the Research Institute fifteen years' experience in investigation related to the education of deaf children. His research includes a longitudinal nation-wide evaluation of preschool programs for the deaf; an evaluation of federally funded regional vocational-technical training programs for the deaf; investigations of language development of deaf children; research into the relationships between manual communication and speech; and studies on the development of pre-reading and reading skills. His publications include the major textbook, *Educating the Deaf: Psychology, Principles and Practices*, approximately 30 manuscripts and chapters, and more than 60 articles, reports and reviews.

Glenn S. Pfau,
Associate Professor and Director, Office of Sponsored Research.
B.S., University of Oregon; M.S., Oregon College of Education; Ph.D.; Ohio State University (Speech and Hearing Science).
Dr. Pfau came to Gallaudet after eight years as Associate Director and Director of Project LIFE, a major national curriculum development project for hearing impaired children. In his present post he holds the primary responsibility for identifying sources of grant funding for research and other projects, and for working with faculty and staff members in development and submission of formal proposals. In addition he provides extensive consultation and instruction in the area of grantsmanship.

James M. Pickett,
Professor and Director of the Sensory Communication Research Laboratory.
A.B., Oberlin College; Ph.D., Brown University (Experimental Psychology).
Dr. Pickett has been a major contributor to speech research since 1962. His recent scientific articles are on the nature of residual hearing, the speech-understanding of the elderly hearing impaired, and the state-of-the-art in visual/tactile speech. He has written a new textbook for audiologists and teachers, *The Sounds of Speech Communications*.

Brenda Rawlings,
Research Associate, Office of Demographic Studies.
B.A., Wilson College
Ms. Rawlings has more than ten years' experience in a variety of capacities relating to survey design and statistical methods. Her current work includes a national survey of postsecondary programs serving deaf students.

Sally G. Revoile,
Associate Professor, Sensory Communication Research Laboratory.
B.A., M.A., Ph.D., University of Maryland (Audiology).
Dr. Revoile has devoted herself to studies of how the sounds of speech are distorted when received by the impaired ear and to reporting findings to clinicians and scientists.

Karen L. Saulnier,
Research Associate, Signed English Research Program.
B.A., Merrimack College; M.Ed., Boston University (Education of the Deaf).
Ms. Saulnier has written a large number of books in the Signed English Series. She is interested in adapting the series for use by language-delayed and multiply handicapped children.

Arthur N. Schildroth,
Research Associate, Office of Demographic Studies
A.B., St. Louis University; M.A., Marquette University (English Literature)
Mr. Schildroth serves as editor for publications of the Office of Demographic Studies, and supervises achievement testing services for the office. He recently authored a study of enrollment trends at schools for the deaf.

John G. Schroedel,
Assistant Professor, Educational Research Laboratory.
B.A., Gallaudet College; M.A., Ph.D. New York University (Sociology).
Dr. Schroedel focuses on research related to attitudes toward deafness, the sociology of deafness, and economics and social policy.

William C. Stokoe,
Professor and Director of the Linguistics Research Laboratory.
A.B., Ph.D., Cornell University (English Literature).
Dr. Stokoe is preparing for a review and revision of the American Sign Language notation he developed in his landmark book, *A Dictionary of Sign Language on Linguistic Principles*. He also edits *Sign Language Studies* and consults with numerous researchers in the field.

Raymond J. Trybus,
Associate Professor and Dean of the Research Institute.
B.S., M.S., Ph.D., St. Louis University (Clinical Psychology).
In addition to his primary assignment as administrator of the Research Institute, Dr. Trybus remains involved in survey research (he was formerly Director of the Office of Demographic Studies), and in research relating to the mental health of deaf persons. He is also serving as Acting Chairperson of the Department of Educational Foundations and Research in Gallaudet's School of Education and Human Services, where he is guiding the development of a doctoral degree program in educational research.

Tadao Uno,
Associate Professor and Head, Learning and Cognition Studies Group, Educational Research Laboratory.
B.A., University of California, Los Angeles; M.A., Ph.D., University of Southern California (Experimental Psychology).
Dr. Uno's research interests and activities are in such areas as human respondent and operant learning, psychophysiology, hemisphericity, creativity, student characteristics, and teacher education programs.

Clarence M. Williams,
Professor and Coordinator of Faculty and Graduate Student Research.
B.M., Western Michigan University; M.A., Ed.D., Michigan State University (Educational Research).
Dr. Williams works with faculty and students who are conducting research and coordinates the activities of the Institutional Review Board on protection of human subjects. He has been working in the area of research at Gallaudet since 1973.

Stephen Wolk, *Associate Professor and Assistant Director of the Office of Demographic Studies.*
B.A., University of Pennsylvania, M.A., Glassboro State College; Ph.D., Temple University (Educational Psychology).
Dr. Wolk came to Gallaudet in 1978 as Research Associate in ODS, where he now directs planning and analysis activities. His major recent work has involved large scale longitudinal study of the educational achievement of deaf children, and the application of new sophisticated statistical analysis techniques such as log-linear analysis to educational and survey research data.

Barbara Barger
Administrative Secretary,
Educational Research Laboratory

Dorothea Bateman
Lead Data Processing Specialist
Office of Demographic Studies

Fred Brandt
Research Technical Supervisor
Sensory Communication Research Laboratory

Kathy Burton
Administrative Secretary,
Linguistics Research Laboratory

Betty Clarke
Administrative Secretary,
Administrative Offices,
Division of Research

Zeda Daniel
Administrative Secretary,
Sensory Communication Research Laboratory

Karen Dean
Secretary,
Educational Research Laboratory

Susan DeSantis
Research Assistant,
Linguistics Research Laboratory

Elizabeth Fleetwood
Secretary,
Office of Cued Speech Programs

Myrtle French
Secretary,
Administrative Offices, Division of Research

Clara Gillespie
Research Assistant II,
Office of Demographic Studies

Judith Harkins
Assistant to the Dean of the Research Institute
Administrative Offices, Division of Research

Rachel Harris
CAI/CMI Specialist,
Educational Research Laboratory

Eugene Herbert
Electronic Engineer,
Sensory Communication Research Laboratory

Jane Hessler
Administrative Secretary,
DSH Abstracts

Sue Hotto
Editorial Service Specialist,
Office of Demographic Studies

Susan Jablonski
Research Assistant,
Office of Demographic Studies

Barbara Kahl
Administrative Secretary,
Administrative Offices, Division of Research

Harriet Kaplan
Postdoctoral Research Fellow
Sensory Communication Research Laboratory

Philip Kerstetter
Assistant to the Vice President for Research
Administrative Offices, Division of Research

Elizabeth Kipila
Research Aide,
Office of Cued Speech Programs

Chi Lee
Computer Programmer,
Educational Research Laboratory

Sally O'Rourke
Administrative Assistant,
Office of Demographic Studies

Russell Perkins
Dissemination Specialist,
Office of Demographic Studies

Linda Petersen
Research Assistant,
Office of Demographic Studies

Ronald Reed
Research Aide,
Educational Research Laboratory

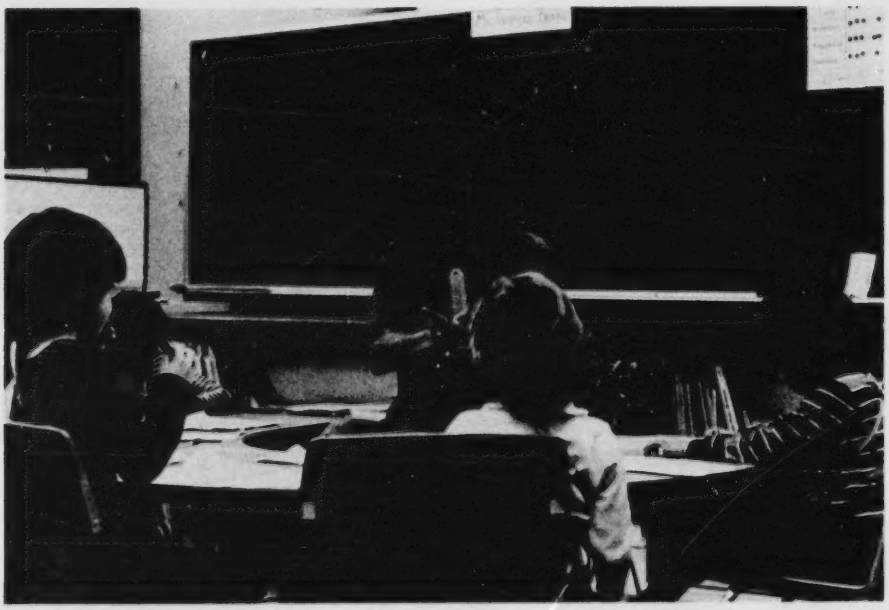
Jerry Siegel
Computer Programmer II,
Office of Demographic Studies

Vivian Stevens
Word Processing Specialist,
Administrative Offices, Division of Research

Beatrice Tepper
Instructor/Resource Aide,
Office of Cued Speech Programs

Blanche Williams
Data Processing Specialist,
Office of Demographic Studies

John K. C. Woo
Computer Programmer II,
Office of Demographic Studies



Representative Publications of Gallaudet Research Faculty and Staff

Books and Chapters

1980

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Baker, C., & Padden, C. Focusing on the non-manual components of American Sign Language. In P. Siple (Ed.), *Understanding language through sign language research.* New York: Academic Press, 1978.

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1976-1977

Baker, C., Regulators and turn-taking in American Sign Language discourse. In L. Friedman (Ed.), *On the other hand: New perspectives on American Sign Language.* New York: Academic Press, 1977.

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Bornstein, H., Saulnier, K., & Hamilton, L. Signed English: A first evaluation. *American Annals of the Deaf*, 1980, 125, 467-481.

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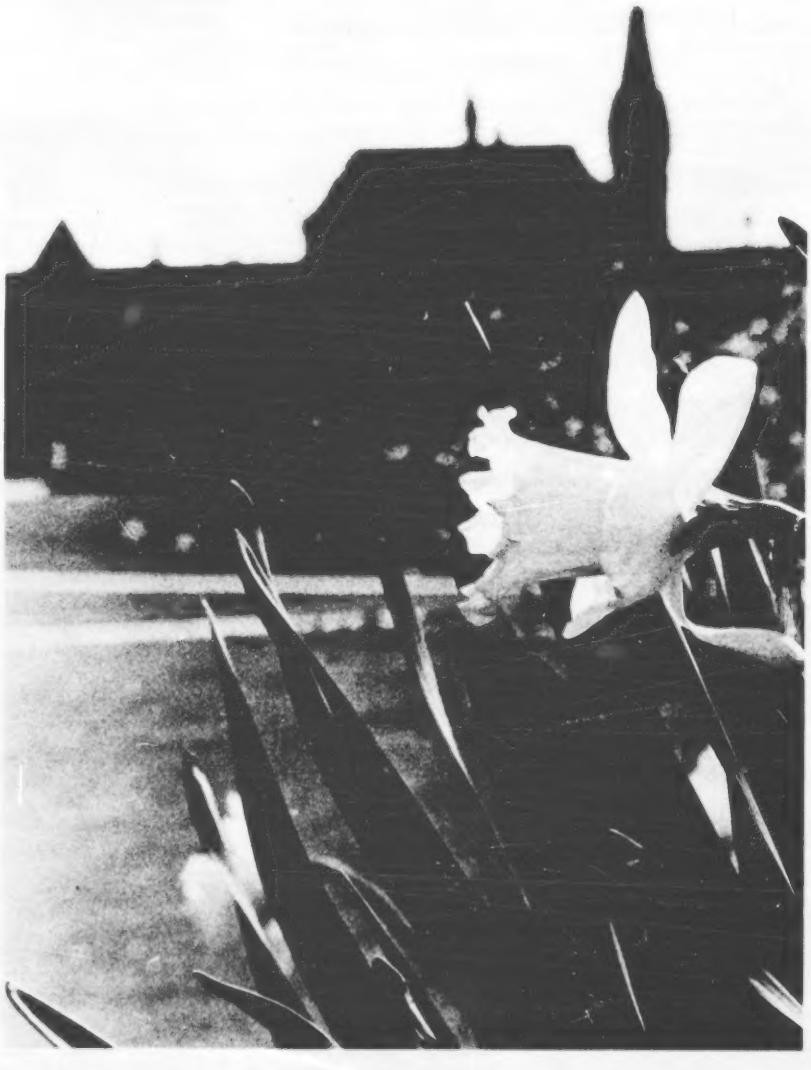

The Gallaudet Research Institute

This paper is a formal mission statement adopted by the Gallaudet College Board of Trustees in January, 1979. It reflects the College's commitment to an organized research program.

The Invisible Handicap

Deafness is the invisible handicap. No wheelchair or white cane signals the absence or impairment of hearing—only the ability to communicate with fellow human beings is disrupted. While other disabilities limit and restrict ease of movement, blind persons or those who are wheelchair-bound can hear and respond to their friends, their families, and members of their community. They can converse with anyone else who has a telephone, and can share in the culture at large through such means as radio, television, film, and the theatre. Two-way communication is so easy and natural that it is rarely given a thought.

But deaf persons are deprived of their most important sensory modality for communication. They have heard little or nothing of the language of the society into which they were born—the language of their parents may not be their mother tongue. The deaf child does not hear the radio, the television, the voice of a traveling parent over the telephone, does not hear the warnings, the encouragements, and the words of comfort which come naturally, easily, and unasked to other children.

What other children bring to school the first day—competency in the use of a two-way communication system—is for most deaf children a major challenge which occupies the central focus of their school years. How this challenge is met or not met determines the nature of the handicap which the deafness will impose. Even if they have the advantage of wholeness in every other ability of mind and body, deaf persons encounter daily an invisible wall as they try to forge the links of human communication with those in the world around them.

However, many do not have the advantage of wholeness. About one deaf child in three faces life with one or more other disabilities in addition to deafness—since the events and causes which produce deafness frequently affect the human organism in other ways as well.

The problems of hearing loss, and the life problems of people whose hearing is impaired, are therefore enormous. More than 14,000,000 Americans have hearing impairments of one sort or another—and the problem is expected to increase. Hearing loss is an especially large problem among elderly persons, and the demographic shift of the U.S. population towards increased longevity (and an older average age) means that even larger numbers of persons will be affected in the years to come. Much needs to be known and done. There are questions about the mechanisms of hearing, about the devices and procedures which can improve hearing ability, and about the social, educational, legal, economic and other facets of life of hearing impaired people. Research must ask the questions, develop the methods, and modify the technologies, all in the hope that in ways both large and small, life will be made better for hearing impaired people, for their families and friends.

Lack of a National Focus on Deafness Research

Just as deafness is the invisible handicap, research in areas related to hearing loss has not had the visibility needed for an integrated, comprehensive approach to the problems of deafness and deaf people. Our Nation has, for example, a National Cancer Institute which is generously funded with public money. There is no comparable public research commitment to the problems of hearing loss and the problems of hearing impaired people. Across the country, there are individuals and small groups conducting valuable research, but their efforts depend upon "on-again, off-again" project support from Federal granting agencies, whose priorities change from year to year, making continuity very difficult at best. There is little formal coordination or interchange at a national level among these people and activities.

Goals of the Gallaudet Research Institute

The establishment of the Research Institute is Gallaudet College's response to this need for greater visibility, greater coordination and collaboration, and greater research effort in carefully selected, high priority areas related to hearing loss. During 1977, the College conducted a comprehensive self-review with an eye to the future. This internal process resulted in a collective assessment that Gallaudet was "not doing all that it could, nor all that deaf people need and want," and that the College would therefore "reassert its historic mission and expand its services to deaf people in the immediate years ahead" (*New Challenges, New Responses: A Report on the Mission of Gallaudet College, 1978*). One of the decisions resulting from this reassessment was that, "Gallaudet will greatly expand its commitment to basic and applied research and seek to become a major research facility specializing in problems of deafness." The ultimate purpose of the Research Institute is to improve the quality of life of hearing impaired people through research. The Research Institute seeks to provide national and international leadership in deafness

research by:

(1) Increasing national awareness of the problems of hearing loss and hearing impaired people, and the need for research on these problems;

(2) Developing a broad-based consensus among hearing impaired people and their families, among scholars and researchers, and others within and outside the field of deafness, regarding the major areas of needed research, particularly those areas having a high probability of productive results given the present state of knowledge and technology;

(3) Establishing research networks involving collaborative research projects, personnel exchanges, resource sharing, joint funding, and other means of cooperation with research groups and individual researchers working in related fields in universities, in Federal and state government agencies, and in business and industry;

(4) Stimulating an interest in deafness research and developing skills in potential researchers and scholars in a variety of fields through research-oriented doctoral level programs, with a special emphasis on providing advanced research and learning opportunities for hearing impaired persons themselves;

(5) Improving existing on-campus research activities through better coordination of efforts by such means as sharing of human and other resources, increasing the base of research-related equipment, increased access to computer services, and providing other supporting resources upon which advanced research depends;

(6) Developing new areas of high priority research on campus which will mesh with current units and projects to form a reasonable and comprehensible mosaic of research programs;

(7) Supporting and encouraging the research activities of other schools, agencies, and institutions for the hearing impaired through such means as technical assistance, information sharing, conferences and workshops, locating sources of financial support, and personnel exchanges;

(8) Encouraging and facilitating an increased level of research within business and industry in areas which have direct or potential application to problems of deafness and deaf people;

(9) Stimulating and supporting College and Pre-College research by faculty and staff, and improving Gallaudet academic programs by means of a strengthened research orientation in course offerings and by providing other learning opportunities;

(10) Bringing the talents of both promising and prominent researchers in various fields, who may or may not be presently involved in deafness research, to bear on the problems of deafness and deaf people through such means as postdoctoral fellowships, visiting professorships, sabbatical project support, and the like;

(11) Establishing research library resources and research equipment inventories to support Gallaudet researchers and to be made available as well to other qualified researchers outside of Gallaudet; and

(12) Providing a wide variety of vehicles for the publication and aggressive dissemination of the results and implications of deafness research, whether conducted at Gallaudet or elsewhere, through printed materials, media, workshops, conferences, consulting and technical assistance, special study institutes, and personnel exchanges.

Structure of the Institute

The Research Institute consists of several research laboratories (organized groups of investigators pursuing long term research programs in specific high-priority fields, with a substantial amount of funding from the base budget of Gallaudet College) and a number of sponsored projects (organized research groups designed to address a particular issue or problem within the goals of the Institute, generally with funding coming primarily from external sources, and typically limited to a short to medium term duration such as one to five years). The Institute presently consists of seven research laboratories: Sensory Communication Research Laboratory, Linguistics Research Laboratory, Office of Demographic Studies, Office of Cued Speech Programs, MSSD/KDES Educational Research Laboratory, Signed English Research Program, and a newly established Mental Health Research Program. To these seven existing laboratories will be added other organized research groups and laboratories as funding permits and as the priority areas for future research are decided upon in consultation with the Scientific Advisory Board. As time goes on, the Institute will also serve as a coordinator of collaborative projects, the actual work of which may be occurring in several different locations around the country, and possibly in other countries.

This simple structure of the Institute means that its administrative officer, the Dean, is in a direct supervisory role over all major research activities of the Institute, and is in a position to monitor, advise, and assist on a day-to-day basis.

Kendall Green Resources

As part of Gallaudet College, the Research Institute shares in the following assets:

(1) The worldwide reputation and respect of Gallaudet College, established over a period of 116 years. Increasingly, individuals and groups pursuing research related to deafness are looking to Gallaudet for major leadership in this area.

(2) The administrative and management support available on Kendall Green. Because the Institute is part of Gallaudet College, no time or effort need be spent on developing a separate management structure for efficiently carrying out planned research.

(3) Fiscal support including accounting, payroll and purchasing services. Again, because the Institute is part of the College, these support services are already available, and the Institute need not spend any of its time and resources developing such a fiscal support system.

(4) Other resources on Kendall Green, which include physical facilities, technology, (e.g., computer, educational technology,

media support), and libraries. From its inception, the Research Institute has available the support of a large scale, sophisticated computer, as well as other research-relevant services such as printing, graphics, and visual displays of various sorts for the effective presentation of research information. In addition, the Gallaudet College library houses one of the world's most complete collections of materials pertaining to deafness and deaf people, including ample research-related material.

(5) Human resources on Kendall Green include experienced and knowledgeable professionals in nearly every phase of service and research relating to deafness and the problems of deaf people. The expansion of the College's graduate programs, the increasing emphasis on public service, and its reorganization and expansion into three schools: College of Arts and Sciences, School of Education and Human Services, and School of Communication, will result in an even greater concentration of human resources in the years immediately ahead.

(6) A student population of all ages (from pre-school children through graduate school and continuing education) in an increasingly research-oriented institution. This means that the Institute is not entirely dependent on outside schools and agencies for access to the deaf individuals who will serve as subjects in many of the Institute's research programs.

(7) The rapport and respect of Gallaudet College with members of Congress, officials of Federal agencies, and administrators of non-Federal agencies and associations. Over the 116 years of its existence and particularly in the last 10 years, the College's administration and faculty have enjoyed close and productive relationships with many such individuals, particularly those involved in the authorization and funding of human service-related programs.

Other Major Resources

The location of Gallaudet College in the Nation's capital provides it with easy access to the enormous resources of Washington, D. C., and the surrounding metropolitan area.

(1) Gallaudet College is an associate member of the Washington Consortium of Universities, which means that it shares plans, programs, and resources with the other universities in Washington, D.C. For example, Gallaudet researchers have immediate access to the library collections of the American University, George Washington University, Georgetown University, Catholic University, Howard University, and a number of smaller colleges. Because Gallaudet already has a history of joint efforts with a number of these other institutions, extension of these cooperative arrangements to an increased level of collaborative research is possible and likely.

(2) The Washington area is home to a large number of major professional associations, such as the American Speech, Language, and Hearing Association, the Council for Exceptional Children, the American Psychological Association, the National Association of State Directors of Special Education, the National Education Association, and a wide variety of others.

The College's faculty has been and will continue to be in a position of close personal relationships with administrators and professional staff members of these associations for purposes of joint planning, mutual support and collaborative activity.

(3) Gallaudet enjoys close collaboration in research matters with its sister institution, the National Technical Institute for the Deaf, administered by the Rochester Institute of Technology. Projects involving a technical focus or requiring technical support which is not available at Gallaudet can perhaps be conducted in conjunction with the National Technical Institute for the Deaf. The two institutions have formal agreements emphasizing collaborative planning and joint support of deafness-relevant projects.

(4) The College also enjoys close and continuing working relationships with a number of other major post-secondary institutions serving deaf students, notably California State University at Northridge, the St. Paul Technical-Vocational Institute, Seattle Community College, Delgado College in

New Orleans, and the Johnson County Community College in Kansas City, to name but a few. These relationships provide a forum for persons interested in research and other activities related to hearing impaired persons, and give the Research Institute access to a larger national population of post-secondary age deaf students than exists within Gallaudet's student body.

With all of the resources within its own boundaries, the resources in the Washington, D. C., metropolitan area, and those resources resulting from collaborative relationships with other deafness-related institutions, the Research Institute of Gallaudet College is in a unique position to carry out its various research missions in an effective and efficient manner.

Scientific Advisory Board

To help ensure the relevance, quality, objectivity, and widespread support of its work, the Research Institute has the benefit of the advice and guidance of a Scientific Advisory Board. The Board advises the Institute and the College administration on priorities, projects, and policies for Gallaudet's research efforts and assists with the design, review, and evaluation of existing and planned research activities.

The Scientific Advisory Board consists of nine members selected from the scientific community and broadly representative of the areas of research which are important to the Research Institute and to the College. The members of the Board are appointed by the President and confirmed by the Board of Trustees, on the basis of names recommended by the Dean of the Research Institute and the Vice President for Research. The members of the Board serve staggered three year terms, so that there is both continuity and a continuous flow of fresh ideas.

The Scientific Advisory Board will meet at least twice a year to review the status, progress, and plans of the Research Institute and to make whatever recommendations for future activities are in order. The board may meet more often than twice a year if necessary, and it may elect to organize itself into subcommittees. It may also decide to appoint an Executive Committee (of three to five members) to which could be delegated certain portions of the role of the total committee for the period between regular meetings.

The Research Institute is committed to a broader level of advisement from other publics and constituencies, in addition to that received from the Scientific Advisory Board. Mechanisms for this would include workshops, seminars, training activities, and similar groupings of people in which broad representation of the various constituencies of the Institute will be involved. In particular, deaf persons, parents and relatives of deaf persons, teachers of the deaf, and others in professions related to education of the deaf and to other scientific disciplines will be involved to significant degrees.

Scope of the Institute's Work

Overall, the Research Institute will seek to:

(1) Increase the quantity and quality of deafness-related research and of reporting results and findings to the public in useful ways;

(2) Encourage respected research scholars, nationally and internationally, to recognize the broad scope of the research priorities established by the Institute, and to become involved in high-priority research;

(3) Encourage a broad base of participation in collaborative research by individuals and agencies outside the campus;

(4) Attract public funding by bidding on requests for proposals and by submitting unsolicited proposals;

(5) Encourage foundation, corporate, and individual philanthropy in support of deafness research; and

(6) Gain the respect of other researchers in the United States and in other countries, both within and outside the field of deafness research, by conducting, coordinating, and disseminating the results of high quality research.

While the work of the Institute will range over a broad array of fields relevant to the problems of deafness and deaf people, the majority of the on-campus work of the Institute will be in various social and behavioral science fields and in education. These are the areas of greatest research need, and they are also the areas in which Gallaudet as an institution already has a firm basis for credibility and effectiveness.

With respect to the broader scope of activities, not limited to campus-based activities, the Institute will be responsive to the periodic recommendations of its Scientific Advisory Board. The result will be a coherent and comprehensive statement of lines of research which are generally acknowledged as important and which

can expect widespread support among researchers and consumers. The identified areas in need of research would be further characterized by ratings of priority in terms of importance and urgency on the one hand, and in terms of feasibility, given the present state of knowledge, on the other.

Without prejudging the result of this process or of the deliberations of the Scientific Advisory Board, it is clear from the literature that at least the following are areas in which there is a great need for research activity, and in which Gallaudet has some present basis for rather immediate action:

- development of reading, language, and communication skills;
- mental health, psychological development, and related issues;
- methods and materials for educational and psychological assessment;
- employment, rehabilitation, and school-to-work transition;
- use of residual hearing and development of speech and speechreading skills;
- problems of hard-of-hearing people, and of those whose hearing loss occurred late in life.

More broadly speaking, the areas in which Gallaudet can and will continue to place emphasis in research are the sociology of deafness, the psychology of deafness, education of deaf people, the economics of deafness, and medical and technological developments. All of these will be approached in a context of the fundamental and very real problems associated with impaired hearing, particularly the reduced opportunities for language development and communication.

The Language and Communication Considerations of Deafness

This is the most pervasive problem area for hearing impaired individuals because it has a spread of effect over all other areas and is of life-long character. The consequences of lessened ability to be understood in the various settings—the hearing family, the schools, the church, social groups, and work—must create considerably reduced motivation to try to communicate with those who are most important to an individual. Some of the

more specific problems in this general area are: how language is learned by hearing impaired individuals; what role(s) American Sign Language, Signed English, Cued Speech, simultaneous communication, etc., can play in learning to read, write and speak English or other languages; how these skills can best be evaluated; how they are best used in the learning of the ideas, concepts, and skills believed necessary for "normal functioning" of an adult in our society; and how the achieving or acquiring of skills and strategies in subject contexts helps in the further achieving or acquiring of general language competencies. Also, we need more work on the linguistic and other properties of nonvocal languages as well as on how new signs (and systems) are generated and used.

Other more specific areas of concern are:

(1) audiologic habilitation, including, what it is; how it is accomplished; what are the presituational, and post-conditions; how it is evaluated; how does it relate to lipreading, speaking, reading, use of technological aids, etc.; and what theoretical approaches or ideas relate to or support it;

(2) What technological devices and medical treatments facilitate or enable linguistic (language) and communication processes for hearing impaired people?

(3) What are the neurophysiological, cognitive, and perceptual consequences of lack of auditory input and of a language based upon visual input with minimal or no auditory component?

The Sociological Considerations of Deafness

Very little work has been done in the way of empirical research on social-psychological and sociological implications of deafness. Increased understanding is needed in such areas as: the deaf child in the family, the deaf adult as a member of the family; the socialization process in the deaf child; variables influencing socialization, e.g., communication methods, school placement, parental and community influences; social patterns of deaf adults, friendships, demographic patterns, identification with, and participation in, social institutions (community organizations, politics, organizations of deaf people, etc.) Knowledge about the effects and consequences of the individual's deafness on his socialization processes are of importance for the education and rehabilitation professionals (e.g., which kinds of socialization experiences lead the individual to become an independent and contributing member of society?).

The Psychological Considerations of Deafness

There is a need to know and understand the effects on students, their teachers, and other professional personnel of individual and group intelligence tests, achievement and other kinds of verbal (English based) standardized tests, testing procedures, and results of tests administered to hearing impaired and multihandicapped deaf students; the design and analysis of classroom diagnostic and learning success measures and their use in grading, and in the educational placement of hearing impaired students. Other serious questions have to do with how (and based on what principles) tests designed for hearing individuals can be modified for use with hearing impaired students and how nonverbal (visual) measures can be designed, used, and analyzed so that useful, reliable, and valid information can be obtained for use in teaching, counseling, and in

other needed circumstances.

The early childhood of hearing impaired individuals is an area which deserves to be systematically explored by researchers. The implications of early diagnosis and developmental problems related to socialization, self-concept, emotional stability, etc., would seem to indicate that a great deal of research is needed and that knowledge gained would be of inestimable value to the later adjustment and normal psychological functioning of deaf persons.

Major questions also remain in the area of mental health and mental illness, and in the delivery of a wide range of therapeutic and preventive services to deaf persons and their families. Which methods are most useful with which groups of deaf people? What is the effect of the use of interpreters in mental health settings? (Do they facilitate or interfere?) Are deaf or normally hearing persons in the role of service-providers more effective with deaf clients? These and many other questions remain almost unstudied.

Educational Considerations of Deafness

The chief concern in this area is the level of education achieved by the majority of hearing impaired individuals. A limited percentage go on to higher education, and in general, this serves to create a sociological problem within the total group. There is a great need to know and understand the various kinds and contexts (residential school, day school, integrated classes, etc.) of education provisions that are being planned, made, and evaluated by the various state and local agencies.

The various communication methods, technological aids, instructional materials, and their degree of effectiveness should be systematically examined. The pre- and in-service preparation of professional personnel also needs study. A plethora of problems are indicated. For example, what are the expected and achieved developmental norms in reading, problem solving skills, career and higher education orientation, and in general maturation of hearing impaired youth? What provisions are made or are available, regardless of setting, for adequate and helpful opportunities to meet emotional, social, and "life skill" problems? What are the trends in the changes of emphases on the integration of hearing impaired and normally hearing students and the numbers and kinds of successes, "transfers", and dropouts related to what program factors? How does the multiply handicapped hearing impaired individual fit into this picture?

Economic Considerations of Deafness

One of the main economic considerations has been identified as underemployment. This may be interpreted in at least two ways—working in areas of low competency requirements, and not working in sufficient numbers. This seems to maintain, for the hearing impaired individual and his family, a low socio-economic status cycle from which it is difficult to break out. Little research has been done in this area, although in recent years the situation is beginning to improve. More relevant research is surfacing and employment opportunities are increasingly being found, due, in part, to recent Federal and state legislation. What is needed is a coherent attack on the problem so that all relevant information can be gathered in one place, analyzed, and researchable problems derived therefrom.

Medical and Technological Developments

Two areas in which Gallaudet is not in a position to work independently, but which are of critical importance to the well-being of deaf people, are the areas of medical research, and development and applications of new lines of "high technology". In the medical area, questions of genetic studies and the prevention of deafness, development of new or improved surgical techniques for the restoration of hearing, and methods of providing direct artificial stimulation of the auditory system (e.g., cochlear implants), all need continued attention. Similarly, new developments and applications of "high technology", especially in the electronics, computers, electronic communications, and microengineering fields, offer great potential for improving the lives of deaf people.

Although Gallaudet is not in a position to act independently in these areas, it cannot afford to stand aside and simply watch from the sidelines. In these areas, therefore, the Research Institute will depend on developing and maintaining contacts within business, industry, and medical research centers for the purpose of learning of developments which might affect deaf people, bringing the problems of deafness to the attention of workers in these other fields, and serving where possible as a

collaborator and facilitator. The Institute will also seek to support development in these areas by serving as a channel for the concerns of hearing impaired people and their families to have an impact on such developments.

Sources of Financial Support

Pursuing the goals, objectives, and activities described above is a time-consuming and costly endeavor, requiring large numbers of personnel and substantial amounts of equipment, supplies, space, materials, and other support.

Gallaudet has provided, and will continue to provide, substantial amount of basic support for research from its Federally appropriated budget. During fiscal year 1980, the College earmarked almost two million dollars to research operations in addition to providing space, facilities, library and computer services, and other forms of support. In the future, this amount can be expected to grow, but in an era of limited governmental budgets it will not be possible to pursue the ambitious, expanded mission described in this document by means of appropriated budgets alone. Federal grant support for research is available from a variety of agencies but, as indicated earlier, these sources respond to a changing variety of fund allocation priorities and cannot therefore be depended upon to provide the requisite funding in the Institute's priority areas on an appropriate schedule. These sources will be used to the extent possible, but they also are not enough.

Clearly, therefore, the systematic and timely pursuit of the Institute's planned program of activities will depend largely on funding from the private sector—from foundations, corporations, and individual philanthropy. Such funding is being sought in two general ways, core funding and project support. Of greatest value to the Institute is core funding, by which is meant contributions to Gallaudet for the purpose of supporting the overall research programs of the Institute. Such funds can be used with great flexibility to provide support where it is needed and when it is needed, in pursuit of research in one or more of the high priority areas selected for the Institute's attention. Support is also sought on a project basis, in which case funds are provided for the support of a particular research project of finite duration and with clearly specified aims and activities. While this method does provide less flexibility for the Institute, it means that a donor—typically a foundation or corporation in this case—can ensure that its contribution is used in support of activities which are clearly in line with its own priorities and objectives. Both types of funding are needed and will be solicited.

Summary

Almost by definition, research work in most of the areas named must be medium- or long-term in nature. Advances are almost certain to come by gradual expansion and improvement of human understanding of the problems, rather than by means of the dramatic "breakthroughs" of the sort likely to capture attention in the news media. Hence, long-term commitment and stability of personnel, funding, and other resources are essential to the fulfillment of the Institute's mission.

In short, the basic operational style of the Gallaudet Research Institute will be the development, with the advice and guidance of a respected Scientific Advisory Board, of networks of skilled and knowledgeable people both on and off campus, representing national and international interests, who will pursue both fundamental and applied research with the ultimate goal of improving the quality of life of hearing impaired people and their families. These scholars and researchers will come to know each other, to share ideas and plans, and to work collaboratively on a wide variety of research endeavors which, taken all together, will form a mosaic of activities with obvious importance and relevance to major issues of concern to hearing impaired individuals.

The fulfillment of the mission described here is clearly a massive undertaking which will require continuity of effort on many fronts over a lengthy period of time. Gallaudet College is committed to devoting a significant proportion of its resources to the development of the Research Institute as a major facility for the planning and conducting of fundamental and applied research in areas related to deafness, and for subsequently disseminating and implementing the results in order to improve the education and welfare of deaf persons. The challenge is to make visible a major effort to improve, through research, the quality of life of people whose disability is invisible.